1975 Northumberland Strait Project, Part I : Benthic Fauna, Flora, Demersal Fish, and Sedimentary Data

J. F. Caddy, T. Amaratunga, M. J. Dadswell,
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1975 NORTHUMBERLAND STRAIT PROJECT, PART I: BENTHIC FAUNA, FLORA, DEMERSAL FISH, AND SEDIMENTARY DATA

by

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PREFACE

Due to many errors in the first printing of this report, it was decided to issue a revised version. The original copy of this report should be discarded.

Special thanks are due Leslie E. Linkletter, Esther I. Lord, M. J. Dadswell, H. W. van de Poll, Evelyn Walker, and Barbara Heileman for their work in the revision, Barbara Garnett and Jeanine Hurley for typing and Ruth Garnett for editing the manuscript.

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ABSTRACT

Caddy, J. F., T. Amaratunga, M. J. Dadswell, T. Edelstein, L. E. Linkletter, B. R. McMullin, A. B. Stasko, and H. W. van de Poll. 1977 (Revised 1984). 1975 Northumberland Strait Project, Part I: Benthic fauna, flora, demersal fish, and sedimentary data. Fish. Mar. Serv. MS Rep. 1431 (Revised): v + 54 p.

The purpose of the 1975 Northumberland Strait Project was to provide a baseline description of the physical and biological environment of the Strait in relation to the commercial shellfish resources. The resulting physical and biological data are presented in this, the first of two data-repository reports.

In the 8 1/2-wk survey, 96 stations were sampled for fauna and flora with a van Veen grab and a beam trawl or scallop dredge. Species lists show distribution and empirical estimates of abundance of polychaetes, amphipods and the other invertebrate taxa, demersal fish, and algae. The depth and bottom temperature recordings describe the physical conditions during the survey. Depth and bottom temperature were criteria used to summarize the biomass listings of the major taxonomic groups. A description of sediments and their distribution was made from samples obtained with a van Veen grab, piston core, and dredges. The core samples were analyzed for heavy metal content.

Key words: Northumberland Strait, baseline survey, shellfish, benthos, demersal fish, sediments, fauna, substrate, lobsters, scallops, crabs

RÉSUMÉ

Caddy, J. F., T. Amaratunga, M. J. Dadswell, T. Edelstein, L. E. Linkletter, B. R. McMullin, A. B. Stasko, and H. W. van de Poll. 1977 (Revised 1984). 1975 Northumberland Strait Project, Part I: Benthic fauna, flora, demersal fish, and sedimentary data. Fish. Mar. Serv. MS Rep. 1431 (Revised): v + 54 p.

L'expérience menée dans le détroit de Northumberland, en 1975, avait pour objet de recueillir des données de base sur le milieu physique et biologique, qui seraient utiles pour la pêche commerciale des mollusques et des crustacés. Le présent rapport, qui sera suivi d'un deuxième, en présente les résultats.

Au cours des huit semaines et demie qu'a duré l'expérience, des échantillons de la faune et de la flore ont été prélevés à 96 endroits, à l'aide d'une benne van Veen, d'un chalut à perche ou d'une drague. La distribution et l'estimation empirique des effectifs de polychètes, d'amphipodes, d'autres taxa d'invertébrés, de poissons démersaux et d'algues sont indiquées dans les listes des espèces recensées. Les observations de la profondeur et de la température du fond servent à décrire les conditions physiques qui existaient durant l'étude. La profoundeur et la température du fond ont servi à résumer les énumérations des effectifs (biomasse) des principaux groupes taxonomiques. La nature et la distribution des sédiments ont été décrites à la suite de l'examen des échantillons prélevés au moyen d'une benne van Veen, de carottiers à piston Alpine et de dragues. Les métaux lourds dans les carottes on été dosés.

FORWARD

The Northumberland Strait Project was conceived in the winter of 1974-75 as a 2-yr, jointly funded, Federal-Provincial study of the shellfish resources of the Northumberland Strait. The main purpose of the first year of the study was to provide a baseline description of the physical and biological environment of the scallop and lobster grounds in the Strait. In the second year it was planned to carry out more specific experiments, observations and detailed through-season measurements of selected parameters identified during the first year as being of particular importance to understanding shellfish distribution and abundance. Unfortunately, due to financial constraints and other priorities, the second year of the study was largely occupied by the description, tabulation, and analysis of the voluminous data collected during the first year of the project. Analysis of selected aspects of the data base is in progress. Because of its immediate relevance to environmental impact studies in the Strait, the raw data are presented in two reports, this one and in Stasko et al. (1977).

The original conception of the joint study by Federal, Provincial, and University groups was to carry out standard observations on a variety of parameters at a fixed number of stations throughout the Strait during the summer months, placing particular emphasis on:

a) commercial shellfish and fish abundances (trapping, trawling, and dredging)

b) the benthic fauna (grab sampling, beam trawling), and

c) the sedimentary regime (grab sampling and coring).

In selecting the parameters to be measured at each station, relatively little emphasis was placed on those variables (in particular the properties of the overlying water masses) which are subject to wide variations on a seasonal, tidal, or diurnal basis. Inevitably, however, there were periodic components in many of the variables measured, e.g. water temperature, vulnerability to trapping of crustacea, benthic biomass and species composition. This is further complicated by the fact that the survey spanned 8 ½ wk during which time there had been progressive changes in seasonal variables such as bottom temperature. The geographical impact of this potential source of bias was compensated for as much as possible by selecting at random the sequence of stations occupied and, in the case of the trap fishing, by repeating the observations at most stations. However, it may still be necessary to take into account the sampling dates when comparing subsets of data. The methods of sampling were not always ideally suited to the wide range of material collected, as was evidently the case for marine algae taken incidentally in the beam trawl. In general, it may be safer to regard the beam trawl data more as an indicator of presence of a particular species on a given station or perhaps as a measure of the ranked abundance, rather than as fully quantitative data.

A list of reports from which the endorsed data are extracted is given in Appendix 1.

ACKNOWLEDGMENTS

The authors wish to express their appreciation to the Provincial Departments of Fisheries of New Brunswick, Prince Edward Island and Nova Scotia for cooperation and financial assistance to Huntsman Marine Laboratory, and the Universities of New Brunswick and Moncton for cooperation in the course of the study. The Department of Fisheries and Environment provided a significant part of the funding and manpower for this study.

Many individuals contributed to the group effort, but major accreditation for sections of the data included in the two reports is given in the following section.

PARTICIPATION IN THE STUDY

Mr. E. M. Gorman, Department of Fisheries and Environment, chaired the steering committee consisting of the three Deputy Ministers of Fisheries of the three Maritime Provinces, J. Mullaly, L. Chenard, and L. D. Johnston. Overall scientific coordination was the responsibility of J. F. Caddy, St. Andrews Biological Station, with A. B. Stasko acting as coordinator for crustacean studies. T. Amaratunga coordinated data compilation for the two reports. B. R. McMullin was field geologist and R. A. Chandler, D. E. Graham, and C. A. Dickson were responsible for faunal sampling aboard the M. V. Harengus (E. H. Benham, master). E. I. Lord, C. D. Burnett, and J. Talbot assisted in faunal sorting and identification, much of which was carried out at the Prince Edward Island Fisheries Training Center and the Pictou School of Fisheries. Capts. K. Merriam and R. Hemphill, directors of these establishments offered valuable cooperation and assistance to the field team.

Special scientific accreditation for sections of the data is as follows:

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Algal studies	T. Edelstein	National Research Council, Halifax
	L. Marks	" " " "
	J. McLachlan	" " " "
Benthic studies	T. Amaratunga	Huntsman Marine Laboratory, St. Andrews
Amphipod identification	M. J. Dadswell	" " " "
Polychaete identification	L. E. Linkletter	" " " "
Fish studies	T. Amaratunga	" " " "
	M. J. Dadswell	" " " "
	L. E. Linkletter	" " " "
Scallop studies	L. E. Linkletter	" " " "
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	C. Stewart	Dept. of Fisheries, Nova Scotia
Geology	H. W. van de Poll	Dept. of Geology, University of New Brunswick
Algae	A. Taylor	National Research Council, Halifax
Coordination with GURBA	J. S. S. Lakshminarayana	Université de Moncton
Gear (beam trawl) design	T. J. Foulkes	DFE, Biological Station, St. Andrews

INTRODUCTION

The Northumberland Strait (45°35'-47°05'N, 61°53'-65°00'W) (Fig. 1) historically has supported a wide variety of fisheries (Caddy and Chandler 1976). During the last two decades, however, there has been a steady decline in the shellfish landings (Amaratunga et al. 1976). Concern for the future of the shellfish fisheries resulted in this interdisciplinary study which was initiated in June 1975.

Fig. 1. Study area in the Northumberland Strait showing boundaries of the four regions and locations of sampling stations.

The study was a broad-scope survey of the Northumberland Strait, designed to collect information on physical and biological parameters related to the life history and production of shellfish, especially lobsters, crabs, and scallops. The project also established baseline data for any future coordinated study of the biological factors and physical environment of the Strait, and will be of considerable value in evaluating the effects of pollution and the potential effects of other uses of the environment on the fisheries.

This report presents data and a preliminary analysis of macrobenthic fauna, algae, and fish along with environmental conditions at the 96 stations. Data for the commercial shellfish species are presented in Stasko et al. (1977).

METHODS

SAMPLING STATIONS

Lobster landings by fisheries district were used as the basis for dividing the Northumberland Strait into four areas (Amaratunga et al. 1976): Areas A and B in Lobster District 8 (open season, Aug. 10-Oct. 10) and Areas C and D in Lobster District 7B (open season, May 1-June 30). Areas B and C reflect where lobster landings have declined since 1960 ("affected" areas); areas A and D reflect where landings have remained stable ("unaffected" areas) (Fig. 1).

Twelve transects, each with eight stations (except for the split transect in area B), making a total of 96 stations, were established across the Strait so that there were three transects within each of the four areas (Fig. 1). Where possible, transects were located so that each had an open shoreline at one end and an estuary at the other. An attempt was made to achieve stratified random sampling by depth to obtain an equal number of samples in each of four depth zones: 0-9, 10-19, 20-29, and >30 m. When a depth zone was not represented in a transect, sampling stations were located randomly.

Collection of samples from M.V. Barengus commenced on June 2, 1975, in Lobster District 8 (Areas A and B) before the lobster fishing season in the district began. Sampling in Lobster District 7B (areas C and D) began o July 15, 1975, after the lobster fishing season closed. Sampling was completed on August 1, 1975.

SAMPLING PROCEDURE

(1) Depth and temperature (surface and bottom) recordings were made and surface and bottom water samples were taken.

(2) Two benthic samples were taken with a van Veen grab. The samples were for size analyses of the bottom sediment and the analysis of benthic macrofauna.

(3) One core sample was taken with an Alpine corer for the analysis of subsurface sediments.

(4) Two dredge samples were taken, using a beam trawl or a scallop dredge. Samples were analyzed for commercial shellfish, other benthic fauna, demersal fish, and marine algae.

BENTHIC FAUNA

van Veen grab

A 0.1-m^2 van Veen grab sampler was used to obtain two bottom samples per station (a 0.1-m^2 Smith-McIntyre grab sampler was found unsatisfactory under open sea conditions). A subsample was removed from each grab for fauna analysis, and another subsample of approximately 440 mL for sediment analysis.

The subsamples were washed on a 0.5-mm mesh screen on deck. The screened material was stored in 10% neutral formalin until it could be sorted in the laboratory. Animals were often conveniently separated from the sediment by floating them in a saturated sucrose solution.

The wet weights (balance weighing to ±0.01 g) were taken of each of the major components; worms, bivalves, gastropods, echinoderms, arthropods, and others, after removing surface moisture with absorbent paper and allowing to stand for 2 min. Fauna were then identified by conventional taxonomic methods and their numbers were recorded. The most common unit of classification was the species, but some taxonomic units were identified at generic and higher levels.

Beam trawl and scallop dredge

Epibenthic fauna samples were obtained from 0.5-mile (0.9-km) tows (distance estimated by Decca), using a beam trawl or a scallop dredge. The

beam trawl (Appendix 2) designed by T. J. Foulkes, Department of Fisheries and the Environment, St. Andrews) used when the substratum was not rocky, was 3 m wide with a 2.5-cm mesh codend and two 1-cm diameter tickler chains. The scallop dredge, used on rough bottom, was a gang of four 0.8-m wide steel frames with a 2.5-cm mesh liner. Catch volume was estimated, using approximately 50-L tubs. No cross calibrations of the beams trawl and scallop dredge were made.

A measured volume (approximately 20 L) of unsorted catch from each first tow was saved in 10% neutral formalin for later laboratory analysis. The fauna and flora were studied separately.

Epibenthic fauna were identified and counted. The demersal fish were identified to species and their total length was measured.

The algae were identified to species (taxonomic nomenclature followed was mainly that of South (1984), South and Cardinal (1970) and of Taylor (1957). Volumes of the dominant species were determined, using a graduated cylinder.

BOTTOM SEDIMENTS

Bottom sediment samples obtained from the van Veen grab were analysed for size fraction distribution. Soft sediment cores were obtained with the Alpine 202 piston corer. The corer (approximately 144 kg) was found to be too light for adequate penetration into the coarse sediments, and up to four attempts were required on some stations to obtain maximum penetration and retention of core. Cores were stored in an upright position on deck to permit settling of the sediment within the plastic liners, and were subsequently frozen to minimize organic decay and destruction of sedimentary features.

In addition to van Veen sediment grab and core samples, a sample of rocks and boulders from the dredge samples provided data on composition and provenance of the bottom sediments.

Data from the grab and core samples for the finer-grained fractions and from the dredges for the coarsest bed load fractions were coded and subjected to computer analysis.

RESULTS

DESCRIPTION OF THE AREA STUDIED

Station locations and dates of sampling along with corresponding measurements of physical factors are given in Table 1. Depths and bottom temperatures are illustrated in Fig. 2 and 3. Data on tidal current velocities are taken from Kranck (1972).

Depths ranged from 5-49 m with most stations falling within the 10-20 m range. The deepest regions are at the northwest and southeast entrances to the Strait (areas A and D). Bottom temperatures during the survey ranged from 2.5-19.5°C. The shallower regions had attained the higher bottom temperatures, while in the deep areas cold water still reached far into the entrances of the Strait.

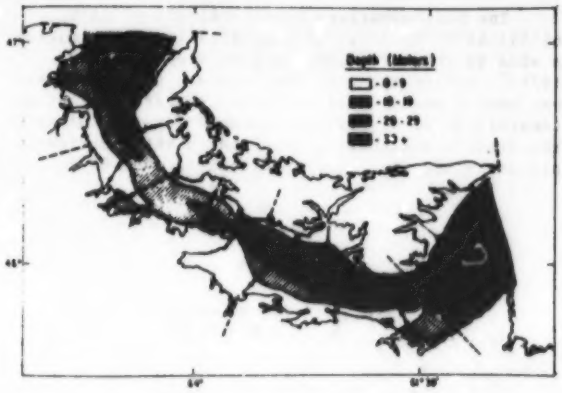

Fig. 2. Depth contours based on echo-sounder data at time of sampling.

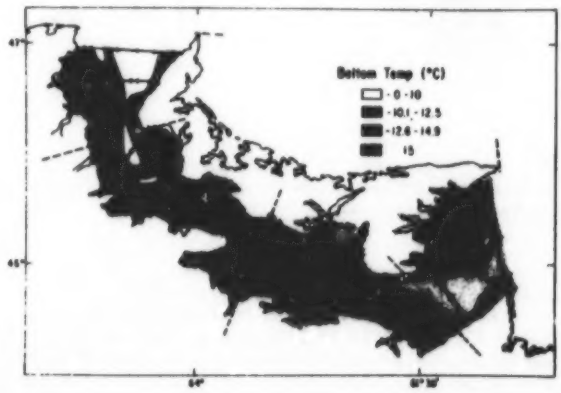

Fig. 3. Bottom temperature contours based on recordings at time of sampling.

VAN VEEN GRABS

Benthic fauna

Tables 2, 3, and 4 show the distribution and an empirical estimate of abundance of the polychaetes, amphipods, and other taxa encountered.

Ninety-one species of polychaetes belonging to 29 families were recorded (Table 2). The family Spionidae had the largest number of individuals, 53% of the total, and the family Lumbrineridae was second with 13%. The most common species of polychaetes were:

Species	% of stations	Mainly in areas
Prionospio steenstrupi	50	C
Pholoë minuta	48	C and D
Ninoë nigripes	42	C

Seventy-three species of amphipods belonging to 19 families were recorded (Table 3). The most common amphipod species were:

Species	% of stations	Mainly in areas
Phoxocephalus holbolli	26	A and B
Corophium bonelli	25	B
Ampelisca macrocephala	21	A, B, and D
A. vadorum	19	B and C
Unciola irrorata	18	A and B

There were two species of amphipods not previously recorded in Northumberland Strait: Melita obtusata (1 specimen) and Centromedon pumilus (4 specimens), arctic species, were found in stations 92 and 84, respectively, in area D.

Twenty-six species of bivalves belonging to 13 families and 16 species of gastropods belonging to 12 families were recorded (Table 4). The most common molluscan species were:

Species	% of stations	Mainly in areas
Thyasira gouldii	25	C and D
Astarte undata	24	B and C
Clinocardium ciliatum	20	B and C
Tellina agilis	16	B
Nassarius trivittatus	15	B and C
Retusa canaliculata	14	B and C

Twenty-six species of arthropods (i.e. excluding excluding amphipods in Table 3) belonging to 13 families were recorded (Table 4). The most common species were:

Species	% of stations	Mainly in areas
Eudorella truncatula	27	C
Diastylis quadrispinosa	14	D
D. sculpta	10	C
Aeginina longicornis	11	B

The most common of the 6 echinoderm species were:

Species	% of stations	Mainly in areas
Echinarchnius parma	32	A and B
Ophiura robusta	17	A, B, C, and D

Hydroids and Bryozoa were most common in area B.

Biomass

Wet weight or biomass, as a quantitative measure of fauna (Table 5), is valuable when individuals vary greatly in size and/or are not countable. The data are summarized (Table 6) to illustrate distribution and relative abundance of the major faunal groups as percentages within each physical factor. Echinoderms constituted more than 40% of the total biomass in areas A and B, while bivalves accounted for more then 40% in areas C and D. Although worms constitute a small percentage of the total biomass, their relative biomass importance was noted in areas A, C, and D.

BEAM TRAWL AND SCALLOP DREDGE

Benthic fauna

Macrobenthic fauna catch records (Table 7 and 8) exclude major commercial shellfish data and fish catches. Some small sessile and/or colonial forms like Coelenterata, Bryozoa, and Porifera were not identified. Hence, the species list for these phyla is not complete. Worms were not identified although their presence was recorded. Altogether, 199 macrobenthic species were identified.

Echinoderms were most prevalent, dominated by Asterias vulgaris, occurring on 64% of the stations, Henricia sanguinolenta, (53%), and Echinarchnius parma, (47%). These were found mostly in areas A, B, and C and were less common in area D. Other common echinoderms were the brittle stars, Ophiopholis aculeata, occurring mostly in area A, and Ophiura robusta and O. sarsi occurring mostly in areas A and D.

Among the 25 species of bivalves, the mussels, Modiolus modiolus (35.5%) and Mytilus edulis (31.3%) were most common and uniformly distributed throughout the Strait; Astarte undata (27%) was most prevalent in areas C and D. There were 37 gastropod species, with Nassarius trivittatus (21%), Lunatia heros (17%), and Neptunea decemcostata (14%) most common. The slipper limpets Crepidula fornicata (18%) and C. plana (19%) occurred virtually exclusively in area B. A probable new species (to be confirmed) of Colus was found on station 77 (area D).

Of the 76 species of arthropods, amphipods (51 species) constituted the major component. Excluding the amphipods, the most important arthropods were: Crangon septemspinosa (36%) found in areas A, B, and C, Pagurus acadianus (30%) mostly in areas A and B; and Pandalus montagui (21%) mostly in areas C and D.

The sessile colonial forms - Hydroids (51%), Bryozoans (47%), and Porifera (47%) - were commonly encountered in all four areas.

Demersal fish

Thirty-one species of fish belong to 12 families (Table 9) were recorded in the total catch of 2460. Winter flounder, Pseudopleuronectes americanus, was the most common, occurring on 60% of the stations, and constituting 47% by number of the total catch. It was most common in areas B and C. Another flatfish, the yellowtail flounder, Limanda ferruginea, occurring on 43% of the stations, commonest in areas C and D, was an important component. The longhorn sculpin, Myoxocephalus octodecemspinosus (68%) was distributed throughout the Strait in relatively small numbers.

Length-frequency data of some of the major fish species are summarized by area in Fig. 4.

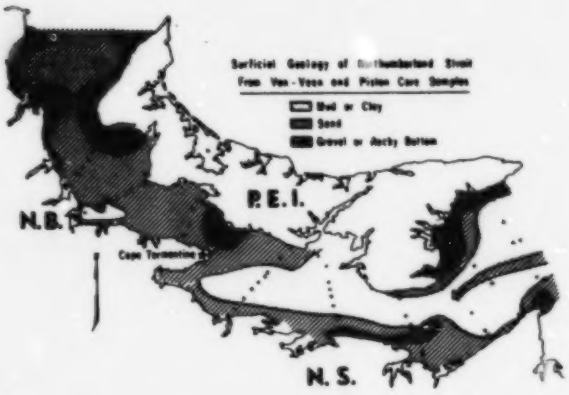

Fig. 5. Surficial geology of Northumberland Strait from van Veen and Piston core samples.

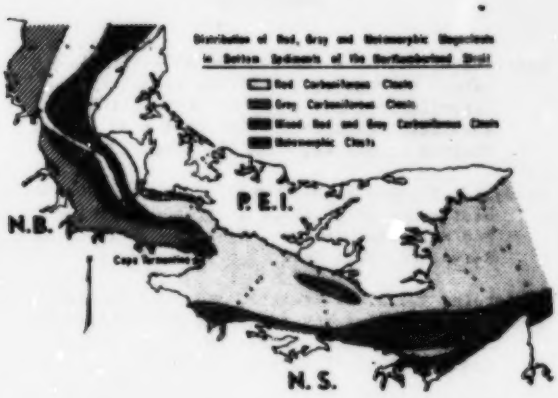

Fig. 6. Distribution of red, grey and metamorphic megaclasts in bottom sediments of the Northumberland Strait.

Core data

Seventy-two cores were obtained from the 96 stations. The total accumulated length was 5018 cm, with an average core length of 69.7 cm. Penetration rates indicate a considerable difference in depth of cores obtained between the northwestern and southeastern parts of the Strait. Maximum core penetration in the northwestern area did not exceed 64.0 cm with 27 out of a total of 49 stations yielding cores, whereas penetration in the southeastern and eastern area ranged up to 300.0 cm with 34 of 48 stations yielding cores. This difference in penetration is directly related to the bottom sediments being finer-grained in the southeastern and eastern parts of the Strait.

The number of sedimentation units that could be recognized fro_ x-rays of the cores ranged from 1-12, with the majority of cores exhibiting between two and five recognizable units. The sediments intersected ranged from coarse to fine and included a number of prominent shell-fragment layers.

The most significant observation that can be made from the x-ray photographs is the widespread fining upward trend of the sedimentary column (Table 16), although this trend was less obvious in the southeastern and eastern parts of the Strait than in the northwestern part.

Heavy metals

Fifty-five grab and core samples from 29 stations were analyzed for Cu, Zn, Mn, Cd, As, and Hg in an attempt to determine their concentrations in the surficial bottom sediments. In addition, three cores (#52, 54, and 55) were analyzed at 50-cm vertical intervals. The results are given in Table 17 for bottom grab and in Tables 18 and 19 for core samples. Two subpopulations may be tentatively identified where the area east of Cape Tormentine contains higher values compared with the area west of Cape Tormentine for all elements analyzed except mercury and arsenic which show either a stable distribution (Hg) or a reduction in values (As).

Anomalous heavy metal concentrations were not detected in either the core or bottom grab samples (Table 20), compared with the subsoil and crustal rock. There were also no obvious vertical variations in heavy metal content at 50-cm intervals in cores #52, 54, and 55. These results indicate that no recent accumulations of Cu, Zn, Mn, Cd, As, or Hg, are present in the bottom sediments.

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Table 1. Physical characteristics of the 96 stations in Northumberland Strait sampled by the Harengus in 1975. Current velocity in knots (Kranck 1972): 1) 0-0.25, 2) 0.25-0.50, 3) 0.50-0.75, 4) 0.75-1.0, 5) 1.0+. Dredge gear: S-Scallop Drag, B-Beam Trawl.

Station no.	Latitude D	M	S	Lontitude D	M	S	Date D	M	Dredge gear	Depth (m)	Bottom temp. (°C)	Current vel. (knots)
1	46	57	10	64	47	10	12	6	S	9	11.6	2
2	46	57	45	64	45	40	11	6	B	13	11.0	3
3	46	57	45	64	39	10	11	6	B	22	13.0	3
4	46	57	45	64	33	40	11	6	B	23	6.7	3
5	46	57	45	64	25	15	12	6	B	36	6.6	2
6	46	57	45	64	17	35	12	6	S	29	10.0	1
7	46	58	20	64	10	45	17	6	S	14	13.1	1
8	46	58	45	64	10	25	18	6	S	7	13.1	1
9	46	55	10	64	16	10	18	6	S	9	12.4	1
10	46	52	40	64	16	15	18	6	B	16	9.8	2
11	46	52	20	64	22	15	18	6	B	29	2.5	2
12	46	52	15	64	24	45	2	7	B	29	9.0	2
13	46	51	30	64	39	50	2	7	B	25	10.5	3
14	46	51	20	64	42	40	2	7	B	18	12.6	3
15	46	51	15	64	46	25	2	7	B	13	13.5	3
16	46	51	00	64	51	05	3	7	B	11	13.6	2
17	46	43	30	64	43	55	3	7	B	9	12.5	3
18	46	43	40	64	40	00	3	7	S	18	11.7	4
19	46	43	50	64	36	05	3	7	S	14	14.7	4
20	46	43	55	64	34	05	4	7	S	20	13.3	4
21	46	44	00	64	32	30	4	7	S	22	12.2	4
22	46	44	10	64	30	10	4	7	S	25	12.0	4
23	46	44	20	64	25	35	4	7	S	14	15.0	3
24	46	44	30	64	23	30	4	7	S	11	15.5	3
25	46	36	20	64	23	25	4	7	S	7	17.0	5
26	46	35	35	64	24	00	1	7	B	13	14.2	5
27	46	33	30	64	25	30	10	6	B	22	9.3	5
28	46	31	20	64	27	10	6	6	B	22	6.1	5
29	46	29	35	64	28	25	1	7	B	13	14.6	5
30	46	26	50	64	29	10	26	6	B	9	14.1	4
31	46	26	30	64	30	55	26	6	B	9	15.3	4
32	46	23	10	64	33	20	26	6	S	5	16.2	3
33	46	17	15	64	29	00	25	6	B	22	16.8	3
34	46	18	35	64	25	00	13	6	B	9	10.7	4
35	46	19	20	64	22	30	13	6	B	14	11.4	4
36	46	20	15	64	20	00	13	6	B	14	11.4	5
37	46	21	30	64	15	50	10	6	B	13	10.8	5
38	46	22	05	64	14	05	10	6	B	13	10.8	5
39	46	23	15	64	10	45	5	6	B	11	11.5	5
40	46	24	00	64	08	35	5	6	B	7	14.5	5
41	46	19	40	63	51	45	3	6	B	9	15.0	4
42	46	18	00	63	52	30	3	6	B	14	11.5	4
43	46	14	10	63	54	15	3	6	B	22	11.4	4
44	46	11	45	63	55	15	4	6	B	11	11.6	4
45	46	08	15	63	45	45	24	6	B	9	15.1	3
46	46	11	10	63	44	15	24	6	S	29	13.5	4
47	46	13	40	63	43	40	24	6	B	14	14.2	5
48	46	14	50	63	43	00	24	6	B	9	14.6	5
49	46	08	05	63	19	15	10	7	B	9	14.8	2
50	46	06	00	63	22	10	10	7	B	18	15.8	2
51	46	02	10	63	27	20	9	7	B	20	16.4	2
52	46	01	45	63	27	50	9	7	B	22	11.0	2
53	46	00	05	63	30	00	9	7	B	20	14.0	2
54	45	58	30	63	32	10	8	7	B	18	17.5	2
55	45	56	30	63	34	55	8	7	B	14	16.6	2
56	45	54	05	63	38	15	8	7	B	9	17.5	2
57	45	48	25	63	03	00	16	7	S	5	19.0	2
58	45	51	30	63	03	50	16	7	B	18	10.4	2
59	45	54	10	63	04	40	16	7	B	31	10.9	3
60	45	56	30	63	05	15	18	7	B	27	10.8	3

Table 1. (cont'd.)

Station no.	Latitude D	M	S	Longitude D	M	S	Date D	M	Dredge gear	Depth (m)	Bottom temp. (°C)	Current vel. (knots)
61	45	58	30	63	05	14	18	7	B	22	14.5	3
62	45	59	5	63	05	50	18	7	B	22	13.5	3
63	46	03	45	63	56	45	17	7	B	16	15.5	2
64	46	06	30	63	08	45	17	7	B	9	17.3	2
65	45	56	50	62	44	30	30	7	B	9	12.3	5
66	45	55	45	62	43	50	30	7	B	31	7.6	5
67	45	55	15	62	40	40	30	7	S	29	10.9	4
68	45	49	30	62	39	30	30	7	S	20	12.8	3
69	45	47	40	62	38	30	26	7	S	7	17.5	3
70	45	46	40	62	37	30	29	7	S	7	15.5	3
71	45	43	40	62	35	40	24	7	B	9	16.2	3
72	45	43	00	62	35	00	25	7	S	14	17.0	3
73	45	46	15	62	10	45	1	8	B	14	14.6	2
74	45	47	00	62	11	40	1	8	B	29	7.6	2
75	45	48	10	62	13	00	1	8	B	32	6.2	2
76	45	52	45	62	18	40	31	7	B	31	5.3	2
77	45	56	15	62	22	40	31	7	B	40	2.6	4
78	45	56	45	62	23	30	31	7	B	36	6.1	4
79	45	57	15	62	24	00	31	7	B	36	3.4	4
80	45	59	40	62	27	15	31	7	B	14	11.6	4
81	46	10	45	62	25	00	23	7	S	9	19.5	2
82	46	08	05	62	23	15	24	7	S	16	19.0	2
83	46	07	00	62	21	35	23	7	S	22	16.5	2
84	46	03	45	62	16	45	24	7	B	34	13.5	2
85	46	02	10	62	14	10	24	7	S	14	15.5	2
86	46	01	00	62	12	20	21	7	B	34	14.0	2
87	45	52	00	62	01	05	21	7	B	25	19.0	2
88	45	52	35	61	58	35	21	7	B	14	18.9	2
89	45	53	25	61	53	40	21	7	S	14	19.5	1
90	45	53	00	61	51	38	22	7	S	32	15.0	1
91	46	00	30	61	56	30	22	7	B	49	10.0	2
92	46	04	55	61	59	15	22	7	S	32	12.0	2
93	46	09	15	62	04	10	22	7	B	40	12.3	2
94	46	13	40	62	06	40	22	7	B	43	14.0	2
95	46	19	20	62	10	10	23	7	B	34	13.5	2
96	46	21	40	62	10	50	23	7	S	7	18.6	2

Table 2. List of polychaetes recorded in the van Veen grab samples. Species abundance recorded as:

Family, species	Station number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
Polynoidae	
Harmothoë imbricata	. . . . .
H. extenuata	. . . . .
H. oerstedi	. . . . .
Harmothoë sp.	. . . . . 1 . 1 . . . . . 1 1 . . . 1 1 . . . . . 1 . . 1 2 1 1 .
Lepidonotus squamatus	. . . . . 1 . . . . . 1 . 1 . . . . 1 . . 1
Arcteobia anticostiensis	. . . . . 1 . . . . .
Enipo canadensis	. . . . .
Antinoella sarsi	. . . . .
Gattyana cirrosa	. . . . . 1 . . . . .
Hartmania moorei	. . . . .
Eunoë sp.	. . . . .
New species	. . . . .
Sigalionidae	
Pholoë minuta	. 1 . . 1 . . . . 1 . 2 2 . 1 . . . . . 1 1 . . 1 . 1 . 1 . . . . 1 . 1 . 1 . . .
Stenelais limicola	. . . . .
Phyllodocidae	
Phyllodoce sp.	. 2 1 . 1 . . . . 1 . 1 1 1 1 1 2 1 . 1 . . . . 1 1 . . 1 1 . . 1 1 . . 1 . . . 1
Eteone sp.	. 1 . . 1 . . . . . 1 . . . . . 1 . 1 1 . . . . . 1 . . . . . 1 . . .
Eulalia sp.	. . . . . 1 1 . . . . . 1 . . . . .
Hesionidae	
Nereimyra punctata	. . . . . 1 . . . . . 1 . . . . .
Syllidae	
Exogone sp.	. 1 . . . . . 2 . . . . . 1 . . . . 2 . . . . .
Syllis sp.	. . . . . 1 . . . . . 1 . . . . .
Streptosyllis sp.	. . . . . 1 1 . . . . . 2 1 . . . . .
Eusyllis sp.	. . . . . 1 . . . . .
Autolytus sp.	. . . . .
Nereidae	
Nereis sp.	. . . . 1 . . . . . 1 . . . . . 1 . . . . .
Nepthyidae	
Nepthys sp.	1 1 . . 1 1 . . . . . 1 . 1 . 1 1 . . . 1 . . . 1 . . . 1 . . . 2 2 2 1 . . . 1 2
Aglaophamus sp.	. . . . 2 1 . . . . . 2 2 1 . . . . . 1 . . 1 . . . . . 1 2 . . . . .
Sphaerodoridae	
Sphaerodoropsis minuta	. . . . 1 . . . . .
Glyceridae	
Glycera sp.	. . . . .
Goniadidae	
Goniada maculata	. . . . .
Goniadella gracilis	. . . . . 1 . . . . 1 . . 2 . 2 1 . . . 2 2 1 1 1 . 2 . . . . . 2 1 . . .
Lumbrineridae	
Ninoe nigripes	. . . . . 1 . . 1 . . . . . 1 . . . . 1 . . . . . 2 2 2 . . . . .
Lumbrineris fragilis	. . . . . 1 . . . . . 1 . 1 . . . . 1 1 1 1 . . 1 . . . . . 1 1 . . .
Lumbrineris acuta	. . . . . 1 . . 1 . . . . . 1 . . 1 1 . 2 . . . . . 1 . . . .
Drilonereis sp.	. . . . .
Orbiniidae	
Scoloplos sp.	. 1 1 . 2 1 . . . . . 2 1 1 . 1 1 . . . 1 . . . . . 1 . 1 1 . . 1 1 1 . 1 . . .
Spionidae	
Prionospio steenstrupi	. 1 . . 2 2 . . . 1 . 2 1 . . . . . 2 1 . . . 1 1 . . . . 1 1 2 . . . . .
Spiophanes bombyx	. . . . . 1 2 . . . . . 1 2 1 . 1 1 1 1 1 . . . 2
Spio sp.	. . 1 . 1 . . . . 1 . 2 . 1 . . 1 1 . 1 . . . . 1 . . . . .
Polydora sp.	. . . . . 1 . . . . . 1 . . 1 . . . . . 1 . . . .

1 = present, 2 = common, 3 = abundant.

Station number

4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	7	7	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	8	9	9	9	9	9	9	9
2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6

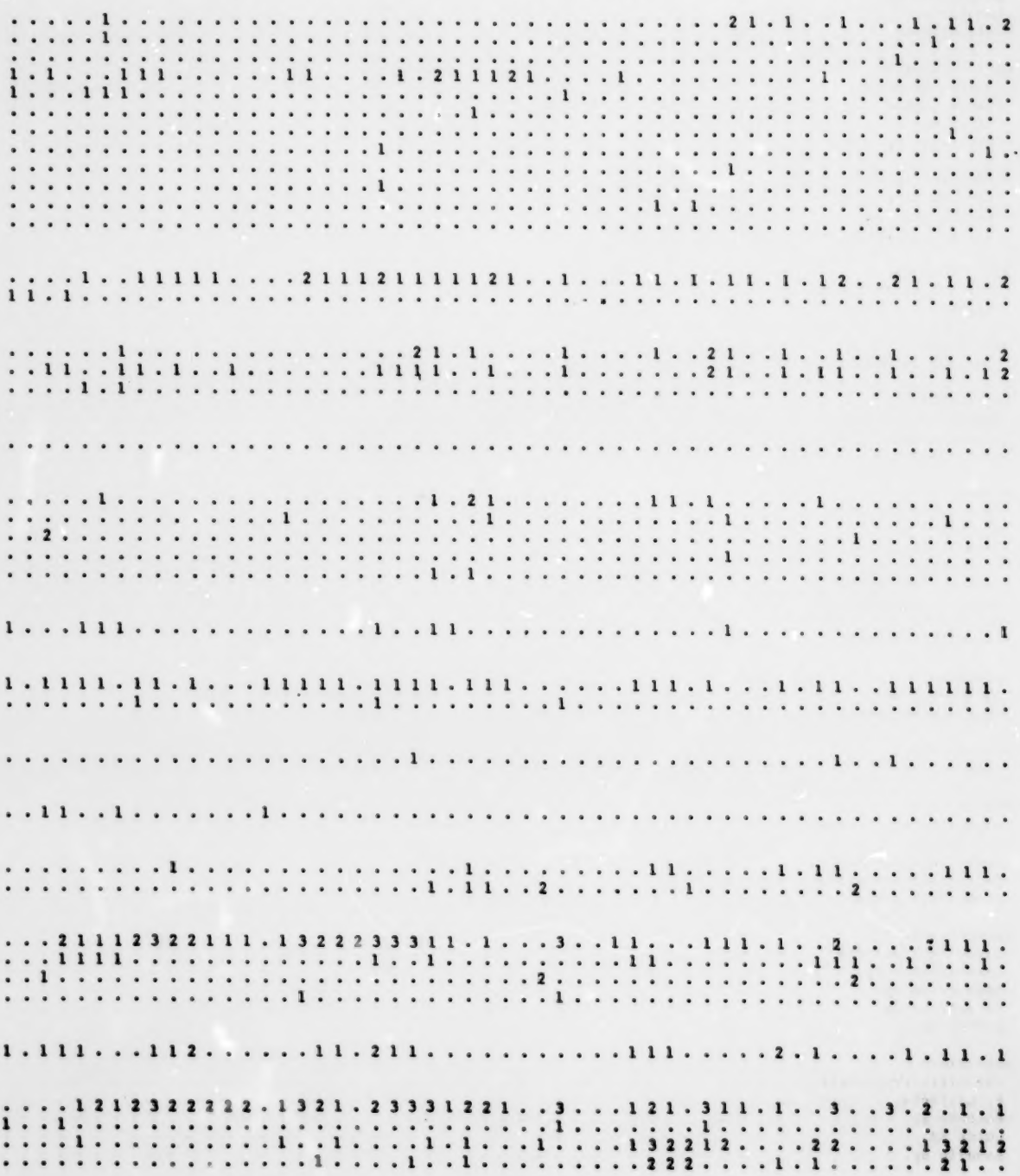

Table 2 continued:

Family, species	Station number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
Scolelepis sp.	. . . . . 1 . 1 . . . . . 1 . . . . . 1 . . . . .
Laonice sp.	. . . . 1 . . . .
Unidentified	. . . . . 1 . . . .
Cirratulidae	
Chaetozone setosa	. . 1 . . . . . 1 1 1 . . 1 1 . . . . .
Tharyx acutus	. . . . .
Tharyx sp.	. . . . 1 . . . . . 1 . . . . . 1 . 1 1 . . . 1 1 1 . 1 . . . . . 1 . . .
Cirratulus sp.	. . . . .
Flabelligeridae	
Brada villosa	. . . . .
Pherusa plumosa	. . . . 1 . . . . .
Diplocirrus hirsutus	. . . . .
Scalibregmidae	
Scalibregma inflatum	. . . . .
Polyphysia crassa	. . . . . 1 . . . . .
Ophelliidae	
Ophelina acuminata	. . 1 . 1 . . . . . 1 2 . . . 1 1 . . . . . 1 1 . . . . .
Capitellidae	
Capitella capitata	. 1 1 . 1 . . . . . 1 . . . . .
Heteromastus filiformis	. . 1 . . . . .
Notomastus sp.	. . . . .
Maldanidae	
Clymenella torquata	. 1 . . . . . 1 1 1 1
Clymenura sp.	. . . . . 2 . . . 1 1 . 1 . 1 1 1 . . 1 . . 1 . . . . .
Praxillella gracilis	. . . . . 1 . . . . .
P. praetermissa	. . . . .
Clymenella zonalis	. . . . . 1 . . . . . 1 1 . 1 . .
Rhodine gracilis	. . . . .
Maldane sarsi	. . . . .
Praxillura ornata	. . . . .
Oweniidae	
Myriochele heeri	. . . . . 2 . . . . .
Owenia fusiformis	. . . . . 2 . . . . .
Pectinariidae	
Cistena sp.	. . . . 2 1 . . . 1 . 2 2 3 . 1 . . . 1 . 1 . . . . 1 . . . . . 1 . 1 .
Ampharetidae	
Ampharete acutifrons	. 1 . . 1 1 . . . . . 1 . . . . .
A. arctica	. . . . 1 1 . . . . . 1 . . . . 1 . . . . 1 2 1 . . 1 . . . 1 . 1 . . 1 1 .
Asabellides oculata	. . . . 1 . . . . .
Sabellides octocirrata	. . . . . 1 . . . . .
Anobothrus gracilis	. . . . .
Terebellidae	
Young Terebellidae	. . . . .
Terebellides sp.	. . . . 1 . . . . . 2 . . . . .
Amphitrite sp.	. . . . .
Polycirrus sp.	. . . . 1 . . . . . 2 . . . . . 1 . . . . .
Leaena sp.	. . . . . 1 . . . . . 1 . . . . .
Sabellidae	
Potamilla reniformis	. . . . . 1 . . . . . 1 . . . . .
P. neglecta	. . . . 1 . . . . . 1 . . . . .
Euchone sp.	. . . . . 1 . . . 1 . 1 1 1 . 1 . . . . . 1 . . . . . 2 1 . . . . .
Chone sp.	. . . . . 1 . . . . .
Sabella sp.	. . . . . 1 . . 1 . . . . .

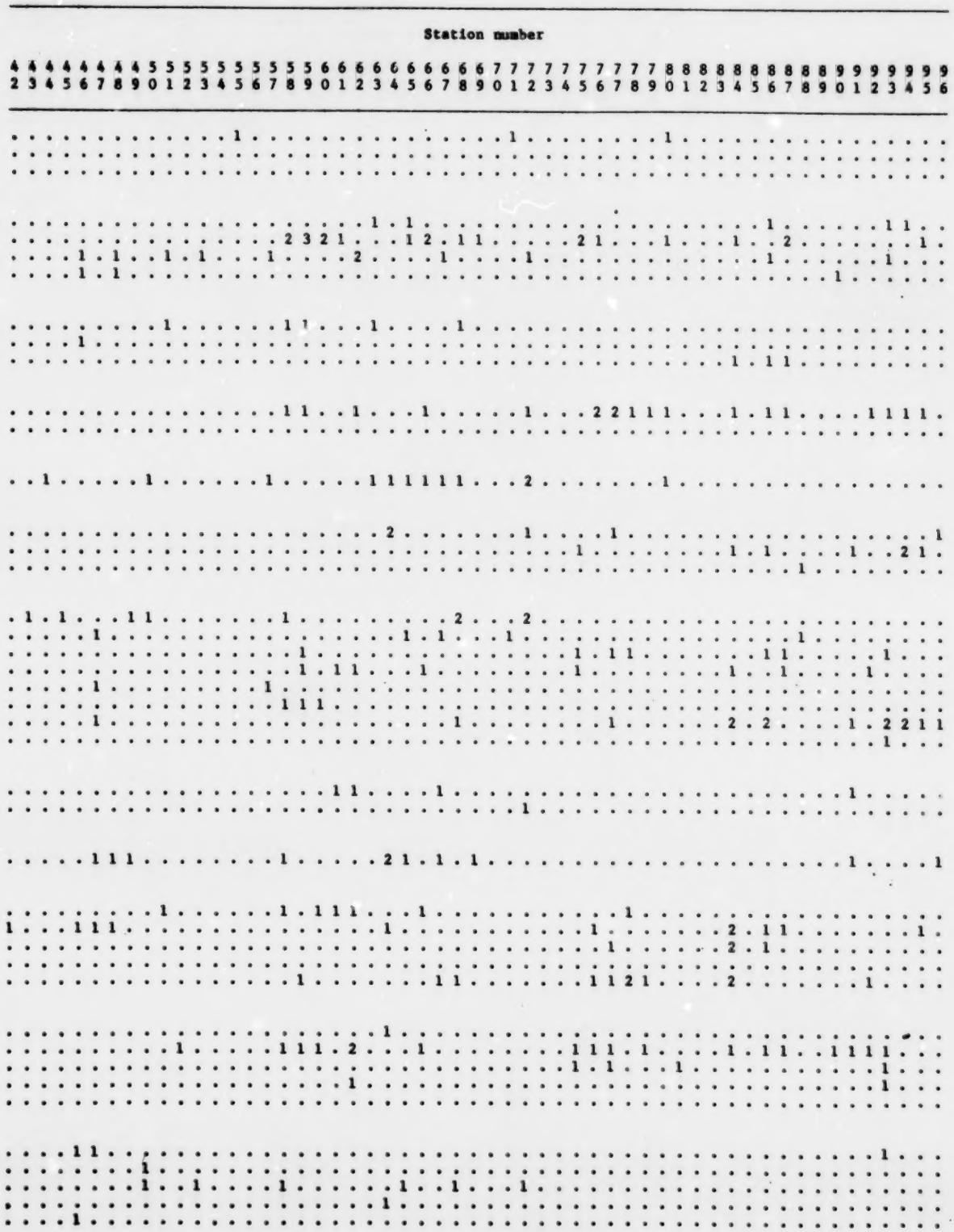
Station number
42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96

Table 2. continued.

| Family, species | Station number | | |

| Station number | | |

Table 3. List of amphipods recorded in the van Veen grab samples. Species abundance recorded as:

Family, species	Station number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
Acanthonotozomatidae	
Acanthonotozoma serratum	. . .

1 = present, 2 = common, 3 = abundant.

Station number

44	44	44	44	44	44	44	45	55	55	55	55	55	55	55	56	66	66	66	66	66	66	66	67	77	77	77	77	77	77	77	78	88	88	88	88	88	88	88	89	99	99	99	99	99	99
23	34	56	78	90	12	34	56	78	90	12	34	56	78	90	12	34	56	78	90	12	34	56	78	90	12	34	56	78	90	12	34	56	78	90	12	34	56	78	90	12	34	56	78	90	12	34	56
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Table 3. Continued.

| Family, species | Station number | | |

Station number

423	434	445	456	467	478	489	501	512	523	534	545	556	567	578	589	601	612	623	634	645	656	667	678	689	701	712	723	734	745	756	767	778	789	801	812	823	834	845	856	867	878	889	901	912	923	934	945	956
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Table 4. List of other fauna recorded in the van Veen grab samples. Species abundance recorded as:

Family, species	Station number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
PELECYPODS	
Nuculidae	
Nucula proxima	. . . . .
N. tenuis	. . . . . 1 . 1 . . . . . 2 . . . . .
Yoldia limatula	. . . . . 1 . . . . .
Y. sapotilla	. . . . .
Y. thraciaeformis	. . . . .
Mytilidae	
Mytilus edulis	. . . . . 1 1 . . . 1 . 1 . . . . .
Musculus niger	. . . . .
Modiolus modiolus	. . . . . 1 .
Crenella glandula	. . . . . 1 . 1 . . . . 1 . . . . .
C. faba	. . . . .
Astartidae	
Astarte undata	. . . . . 1 1 . . . . . 1 . . 1 . 1 . . . . . 1 1 . 1
A. subaequilatera	. . . . . 1 . . . . . 1 . . . . .
Arcticidae	
Arctica islandica	. . . . .
Thyasiridae	
Thyasira gouldii	. . . . . 1 . . . . . 2 1 . . . . . 1 . . . . 1 .
Cardiidae	
Clinocardium ciliatum	. . . . . 1 1 . . . . . 1 . . 1 1 . .
Veneridae	
Gemma gemma	. . . . . 1 . . . . .
Pitar morrhuana	. . . . . 1 2 1 . . . .
Mactridae	
Spisula solidissima	. . . . . 1 . . . . . 1 . . . . .
Tellinidae	
Tellina agilis	. . . . . 1 . . . . . 1 . . . . 1 . . . . 1 . . . . . 2 2 1 . . 1 . . . . .
Macoma balthica	. . . . .
M. tenta	 1
Myidae	
Mya arenaria	. . . . 1 . . . . . 1 . . . . .
M. truncata	. . . . .
Hiatellidae	
Hiatella arctica	. . . . 1 . . . . . 1 . . . . . 1 . . . . .
Pandoridae	
Pandora gouldiana	. . . . . 1 . . . . . 1 .
Thraciidae	
Thracia septentrionalis	. . . . . 1 . . . . .
CHITONS	
Ischnochiton alba	. . . . .
I. ruber	. . . . .
GASTROPODS	
Acmaeidae	
Acmaea testudinalis	. . . . . 1 . . . . .
Trichotropidae	
Trichotropis borealis	. . . . . 1 . . . . .

1 = present, 2 = common, 3 = abundant.

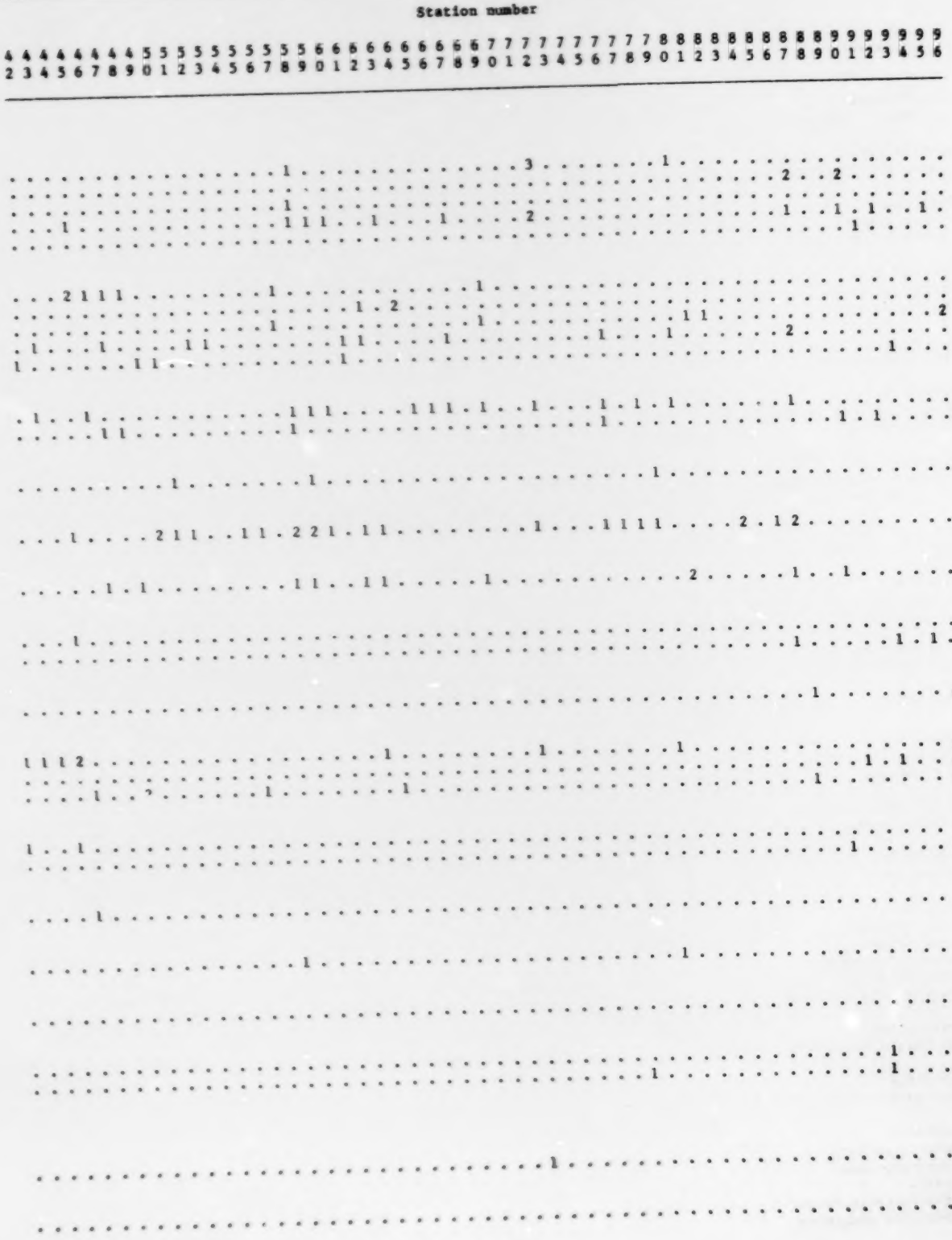

Table 4. continued.

Family, species	Station number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
Calyptraeidae	
Crepidula fornicata	. . . . . 2 . .
Aporrhaidae	
Aporrhais occidentalis	. . . . . 1 . . . . .
Naticidae	
Lunatia heros	. . . . .
L. triseriata	. . . . . 1 . . . . . 1 . . 1 . . . . 1 1
Columbellidae	
Mitrella lunata	. . . . . 1 . 1
M. dissimilis	. . . . .
Buccinidae	
Buccinum undatum	. . . . . 1 1 1
Nassariidae	
Nassarius trivittatus	1 . . . . . 1 . . . . 1 . . . . 1 1 2
N. obsoletus	. . . . . 1 . . . . . 1 . . . . .
Turridae	
Oenopota (Lora) elegans	. . . . .
O. turricula	. . . . .
Cancellariidae	
Admete couthouyi	. . . . . 1 1 1
Retusidae	
Retusa obtusa	. . . . . 2 . . . . .
R. canaliculata	. . . . . 1 1 . . . . . 1 . . . . . 2 2 2
Aclididae	
Aclis tenuis	. . . . . 1 1 1
ARTHROPODS	
Nymphonidae	
Nymphon hirtipes	. . . . . 1 . . . . . 1 . . . . .
N. grossipes	. . . . . 1 . . . . 1 . . . 1 . . . . .
Ammotheidae	
Achelia scabra	. . . . . 1 . . . . . 1 . . . . 1 . . . . .
Pycnogonidae	
Pycnogonum	. . . . . 1 . . . . .
Leuconidae	
Leucon nasica	. . . . .
L. nasicoides	. . . . .
Eudorella emarginata	. . . . .
E.truncatula (SYN=pusilla)	. . . . . 1 . . . . . 2 1 . . 1 . . 1
Eudorellopsis deformis	. . . . . 2 . . . 1 . . . . . 1 1 1 . . . . . ;
Nannastacidae	
Campylaspis rubricunda	. . . . . 1 . . .
Lampropidae	
Lamprops quadriplicata	1 1 1 . 2 . . . . .
Diastylidae	
Diastylis sculpta	. . . . .
D. quadrispinosa	. . . . . 1 . . .
D. rathkei	. . . . .
Brachydiastylis resima	. . . . .
Leptostylis longimana	. . . . .

Station number

Table 4. continued.

Family, species	Station number 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
L. villosa	. . . . .
Caprellidae	
Aeginina longicornis	. . . . . 1 . . . . . 1 . 1 1 1 . . . . . 1 . . .
Caprella linearis	. . . . . 1 . . . 1 . . . . .
C. penantis	. . . . .
Mysidacea	
Mysis mixta	. . . . 1 . . . . . 1 . . . . .
Euphausiacea	
Euphausia sp.	. . . . .
Hippolytidae	
Eualus pusiolus	. . . . . 1 . . . . .
Crangonidae	
Crangon septemspinosa	. . . . .
Paguridae	
Pagurus acadianus	 1
P. pubescens	. . . . . 1 . . . . .
ECHINODERMS	
Strongylocentrotidae	
Strongylocentrotus drobachiensis	. . . . . 1 . . . 1 . . . . . 1 1 . . . . .
Echinarachnidae	
Echinarachnius parma	. 1 1 . . . . . 1 . . 2 2 1 1 2 . . 1 1 . 1 . . 1 1 1 1 2 1 . . 1 . 1 2 1 . . 1
Asteriidae	
Asterias vulgaris	. . . . . 1 . . 1 1 . . . . .
Ophiuridae	
Ophiura robusta	. . . . 1 . . . . . 1 1 . . . . . 1 . 1 2 . . . 1 . . . . .
Ophiactidae	
Ophiopholis aculeata	. . . . . 2 . . . . . 1 . 1 . 1 1 . . . . .
OTHERS	
Metridium dianthus	. . . . . 1 . . . . .
Phascolosoma verrilli	. . . . . 2 . . . . .
Other sipunculids	. . . . .
Salpa sp.	. . . . 1 . . . . .
Molgula sp.	. . . . . 2 . . . . .
Sponges	. . . . . 1 . . . . 1 . . . . . 2 . . . . 1 1 . . . . .
Hydroids	. . . . . 1 . . 1 . . 1 . 1 1 . . . 1 . . . . . 1 . 1 . .
Bryozoans	. . . . . 1 . . 1 1
Ceresmia rubiformis	. . . . .
Duva multiflora	. . . . .
Isopod sp.	. . . . . 1 . . . . . 1 . 1 1
Total no. of specimens	3 5 45 0 0 0 36 3 13 0 6 51 18 28 22 14 88 34 10 26 59 6 0 8 0 33 71 94 12 3 10 22 0 7 8 70 0 135 13 17 3
Total no. of species	2 2 6 0 0 0 11 3 2 0 5 12 7 15 5 4 2 9 1 4 14 2 0 6 0 7 9 4 5 3 4 9 0 4 3 4 0 11 6 10 3

Station number

42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
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Table 5. Biomass (g wet weight) of major faunal components of van Veen grab samples subtotaled by area. Sampling procedure did not permit quantification of samples. Results are relatively comparable only.

Area	Station	Quantity (L)	Worms	Bivalves	Gastropods	Echinoderms	Arthropods	Others	Total
A	1	–[a]	.001		.122			.051	.180
	2	1	.362	.001		4.451	.016		4.830
	3	1	.174			7.498	.058		7.730
	4								
	5	1	.677	.202	.039	3.924	.158	.021	5.021
	6	–	1.018	.024	13.709	8.124	.150	3.525	26.550
	7								
	8								
	9								
	10	1	.483	2.792		19.505	.441	.707	23.928
	11								
	12	–	7.518	3.342	.511	.089	.219	15.120	26.799
	13	1	1.451	.859	.043	.440	.069	.033	2.895
	14	–	4.944	.177		.906	.035		6.062
	15	1	.037			1.228	.002	.037	1.304
	16	1	.062	.001	.018	.564	.001		.646
	17	1	.046	.030		.210			.286
	18	1	.110	1.096		.408	.003	.004	1.621
	19								
	20	–	.259	.006		5.364	.008		5.637
	21	1	.266	.001	.005	.694	.066	.024	1.056
	22	–	.411	.025	.171	7.029	.080	.022	7.738
	23	–	.106	.034		.217	.184	24.755	25.296
	24								
	Total		17.925	8.590	14.624	60.651	1.490	44.299	147.579
B	25	–	.674	.197	.114		.013	.087	1.085
	26	–	1.103	.259		.175	.084		1.621
	27	1	.367	9.953	1.247	14.108	1.440		27.115
	28	1	.094	.008	.107	17.288	.003	1.693	19.193
	29	1	.079	.190		.244	.002	.015	.530
	30	1	.174	.148	.091	8.323		.004	8.740
	31	–	.172	.086		41.784			42.042
	32								
	33	1	.185	.002	.052				.239
	34	1	.543	.034	.405	.031	.133	.024	1.170
	35	1	.457	.091	.140		.066		.754
	36	1	.339	.063	.011	55.524	.009	.016	55.962
	37	1	.056	.031		15.008	.002		15.097
	38	1	.024	.041		1.583	.004	1.523	3.175
	39	1	.016	.010	.074				.100
	40	1	.065	.526		.057	.005	.395	1.048
	41	1	.921	2.624	3.651	.651	1.931		9.778
	42	1	.065	.039	.080	4.886	.006	.672	5.748
	43	1	.031	.051	.792	20.784		.154	21.812
	44	1	.200	.052		6.178			6.430
	45	1	.558	.191	.135	7.103			7.987
	46	1	.067	2.270	.005	7.370	.006	.018	9.736
	47	1	.490	.305	.020	.042	.008	.039	.904
	48	1	.117	.004		.178	.002	.002	.303
	Total		6.797	17.175	6.924	201.317	3.714	4.642	240.569

Table 5. (cont'd)

Area	Station	Quantity (L)	Worms	Bivalves	Gastropods	Echinoderms	Arthropods	Others	Total
C	49	1	.134	.037	.093				.264
	50	-	3.094	.418	.065		.019	.001	3.597
	51	-	.828	.526	.070		.062		1.486
	52	-	4.432	.017	.001		.107		4.557
	53	1	.042	.001	.003			.003	.049
	54	-	.371	.022	.017				.410
	55	1	.090	.009	.010			.013	.122
	56	1	.149	.005	.079	33.441			33.674
	57	1	.282	50.886	.071	.227	.035	.042	51.543
	58	1	.708	.426	.099		.028	.069	1.330
	59	-	8.836	1.795	.133		.862		11.626
	60	-	7.546	3.865	.418		.010	.001	11.840
	61	-	4.478	2.066	.009		.002		6.555
	62	-	3.381	.181	.105		.061		3.728
	63	-	4.512	.044	.036		.035		4.627
	64	-	4.273	.536	.060		.039		4.908
	65	-	.779	22.902		1.692	.014	1.455	26.842
	66	-	3.507	.161			.334	.011	4.013
	67	-	1.730	.779	.045	.585	.195	.205	3.539
	68	1	.918	6.402	.198		.007	.002	7.527
	69	-	.082	56.619		26.705	.028		83.434
	70	-	.023	.011	.010	.107	.001	.578	.730
	71	1	.280		.065	17.100	.006		17.451
	72	-	5.247	1.682	.480		.126		7.535
	Total		55.722	149.390	2.067	79.857	1.971	2.380	291.387
D	73	-	.193	3.933			.010		4.136
	74	-	4.235	.270			.063		4.568
	75	-	14.687	1.030		.302	.047		16.066
	76	-	3.575	3.648			.266		7.489
	77	-	75.062	.074	.099		.642	60.812	136.689
	78	-	4.925	.049			.146	.830	5.950
	79	-	1.786	54.212			.157		56.155
	80	-	.910	2.869		5.063	.093		8.935
	81	-	1.003	58.144	12.319	.637	.006	2.071	74.180
	82	-	.030	112.633		28.981	.001		141.645
	83								
	84	-	7.718	.780	.217		.766	3.931	13.412
	85								
	86	1	.503	.741	.021	.037	.347	.228	1.877
	87	-	6.599	4.327	.132		.116	.290	11.464
	88	1	.177	.044			.004		.225
	89								
	90	-	1.407	.088			.068		1.563
	91	1	.930	.949		.190	.007		2.076
	92	1	1.027	.393		6.379	.153	14.016	21.968
	93	-	13.477	.283	.295	41.811	.064		55.930
	94	-	4.212	.207	.296	3.100	.007		7.822
	95	-	2.281	.518	.035	.001	.143	.152	3.130
	96	-	.677	.111		.885	.455		2.128
	Total		145.414	245.303	13.414	87.386	3.561	82.330	577.408

[a]1-12 L were taken from sample.

Table 6. Biomass distribution of major faunal components in relation to physical factors.

6a. Distribution by area

Area	No. of stations sampled	Ave. total biomass/station (g)	% biomass					
			Worms	Bivalves	Gastropods	Echinoderms	Arthropods	Others
A	17	8.68	12.15	5.82	9.91	41.10	1.01	30.02
B	23	10.46	2.83	7.14	2.88	83.68	1.54	1.93
C	24	12.14	19.12	51.27	0.71	27.41	0.68	0.82
D	21	27.50	25.18	42.48	2.32	15.13	0.62	14.26

6b. Distribution by depth

Depth (m)	No. of stations sampled	Ave. total biomass/station (g)	% biomass					
			Worms	Bivalves	Gastropods	Echinoderms	Arthropods	Others
0-9	20	18.39	2.98	52.50	4.68	37.84	0.71	1.28
10-19	27	12.09	7.43	38.97	0.32	44.39	0.36	8.53
20-29	22	9.63	21.73	16.51	8.32	42.19	1.29	9.96
30+	16	21.92	41.22	18.57	0.32	15.89	1.19	22.81

6c. Distribution by temperature

Temp. (°C)	No. of stations sampled	Ave. total biomass/station (g)	% biomass					
			Worms	Bivalves	Gastropods	Echinoderms	Arthropods	Others
0-9.9	12	27.75	35.11	22.75	0.60	16.58	1.18	23.78
10.0-12.4	26	11.68	15.05	12.08	5.45	59.54	0.70	7.17
12.5-14.9	23	4.05	33.83	20.18	1.19	37.93	1.67	5.19
15+	24	21.96	6.02	54.87	3.29	29.94	0.59	5.28

Table 7. Fauna encountered in beam trawl and scallop dredge samples giving species code and station numbers.

Species	Station numbers
MOLLUSKS	
Astarte undata	19.20.21.24.27.28.36.43.46.47.57.58.59.61.65.67.68.70.71.73.74.77.78.79.84
A. subaequilatera	18.21.66.67.77.78.79.82.84.86
Arctica islandica	4.10.13.18.21.33.57.58.59.60.62.65.66.67.74.75.76.77.78.79.83.84
Clinocardium ciliatum	12.22.25.46.67.72.77.78.79.84.96
Crenella faba	59.66.70.77.94.96
C. glandula	21.22.45.58.67.81
Ensis directus	2.21
Hiatella arctica	6.12.13.18.19.22.24.25.26.27.28.34.46.47.48.58.66.67.69.71.79.84.85.94.96
Lyonsia hyalina	77.95
Macoma balthica	52.85
Modiolus modiolus	2.3.6.7.8.9.10.11.15.16.17.18.19.20.23.24.25.27.32.34.35.38.39.40.41.43.45.46.47.48.50.55.56.57.58.60.62.65.66.67.68.69.70.71.72.73.74.76.77.79.80.81.82.83.85.87.88.89.90.94.96
Musculus niger	67.86
Nucula tenuis	45.72.86
Mytilus edulis	2.3.7.9.10.16.17.18.20.22.25.26.27.36.40.45.50.57.60.64.68.69.70.72.73.74.78.80.81.83.84.85.86.87.90.96
Crassostrea virginica	26.40.58
Placopecten magellanicus	2.3.4.5.6.7.9.10.11.12.13.14.15.18.19.20.21.24.26.27.28.34.35.36.42.43.46.47.48.49.50.56.57.59.60.62.65.66.67.68.69.70.72.75.76.77.78.79.80.81.82.83.84.86.87.88.96
Pitar morrhuana	34.53.56.59.60.61.65.72.74
Tellina agilis	12.31.32.57.58
Thyasira insignis	57
Spisula solidissima	12.25.32.58
Thyasira gouldii	46.81
Yoldia limatula	63
Y. sapotilla	53.55.59.60.61.63.72.74.94.95
Y. thraciaeformis	86.95
Anomia simplex	34.43.89
Cyrtodaria siliqua	11
Aporrhais occidentalis	6.11.12.34.77.86.93.94.95
Admete couthouyi	12.58.67.77.93.94
Buccinum tenue	93.94
B. totteni	6.93
B. undatum	3.6.11.13.17.18.68.77.78.79.85.86.93.94
Colus obesus	94
C. pygmaeus	22.77.78.79.84
C. stimpsoni	6.12.13.22.78.79.84.86.94.95
Colus sp. (new?)	77
Littorina saxatilis	63
Lunatia heros	1.3.4.10.13.14.15.16.21.31.32.34.36.44.71.78.79
L. immaculata	67
L. triseriata	25.26.32.46.57.72.94
Margarites groenlandicus	6.12.22.67.86
Mitrella lunata	57.66
Nassarius obsoletus	22.31.32.61.66.68
N. trivittatus	1.20.21.25.26.30.32.38.41.43.44.46.48.57.59.66.67.70.72.81
Neptunea decemcostata	6.11.12.13.72.73.77.78.79.84.86.93.94
Turbonilla elegantula	32
Oenopota concinnula	94
O. elegans	21.22.35.59.67.77.79.95
O. harpularia	66
O. incisula	94.95
Oenopota sp.	94
O. turricula	12.25.77.79.86.93.94
Philine lima	22.79
Ptychatractus ligatus	67
Solariella varicosa	77.93.94
Thais lapillus	63
Retusa canaliculata	12.13.22.32.34
Trichotropis bicarinata	94
T. borealis	12.22.77.79
Tachyrhynchus erosus	84.95
Velutina sp.	12.13.22.79.86
Aeolidia papillosa	22

Table 7 (cont'd.)

Species	Station numbers
Coryphella sp.	46
Acmaea testudinalis	81.82.96
Acmaea sp.	96
Puncturella noachina	12.22.70
Crepidula fornicata	28.32.35.36.38.39.40.41.42.43.44.45.46.48.50.81.89.96
C. plana	26.28.30.31.32.34.35.36.38.39.41.42.43.44.45.48.71.72
Ischnochiton ruber	4.7.16.69.70.81.82.85.89.96
Loligo sp.	79
BRACHIPODS	
Hemithiris psittacea	6
ARTHROPODS	
Crangon septemspinosa	1.13.15.18.21.22.25.26.30.31.32.34.35.36.38.41.43.44.45.46.50. 52.54.55.57.58.59.60.61.63.67.68.81.
Cancer irroratus	1.2.8.9.10.11.13.14.15.16.17.18.19.20.21.22.23.24.25.26.27.28. 29.30.31.32.33.34.35.36.37.38.39.40.41.42.43.44.45.46.47.48.49. 50.51.52.53.54.55.56.57.58.59.60.61.62.63.64.65.66.67.68.69.70. 71.72.73.74.75.76.77.78.79.80.81.82.83.84.85.95.96
Balanus balanus	16.24.27.31.38.39.40.43.57.65.67.77.78.80
B. balanoides	32.60.67.77.79.86.93
Argis dentata	43.67.77.78.84.86.93.94
Eualus pusiolus	7.25.39.43.46.67
Lebbeus groenlandicus	96
Pandalus montagui	12.21.22.46.52.55.59.60.61.67.70.77.78.79.84.86.93.94.95
Mysis mixta	8.12.13.22.32.78.95
Sabinea septemcarinata	6
Homarus americanus	refer Table 8
Hyas araneus	2.3.8.11.12.13.15.22.61.62.93.94.96
H. coarctatus	2.6.8.11.12.22.65.66.67.77.78.79.81.84
Pagurus acadianus	3.8.10.12.13.14.15.18.20.21.25.26.28.30.31.32.34.35. 36.41.43. 44.45.70.71.78.79.86.94
P. arcuatus	93
P. pubescens	3.6.8.12.13.22.67.77.78.79.82.86
P. longicarpus	10.12.31.38
Acanthonotozoma serratum	22.67
Aceroides latipes	95
Ampelisca eschrichti	94
A. macrocephala	12.21.22.58.66.67.70.77.79
A. vadorum	22.32.34.35.36.50.63
Byblis gaimardi	77.78.79.95
Haploops tubicola	67.77.86
Ampithoe longimana	40.41.48.49.96
Leptocheirus pinguis	21.50.67.78
Unicola irrorata	18.20.21.22.25.26.31.32.36.39.50.67.71.81
Corophium acherusicum	96
C. bonelli	22.24.26.31.41.49.62.66.67.77.96
C. crassicorne	22.67
Erichthonius rubricornis	8.12.21.22.66.84
Ischyrocerus anguipes	22
I. commensalis	22.58.78
Anonyx liljeborgi	79.84.94
Orchomenella minuta	12
O. pinguis	15.21.22
Psammonyx nobilis	21.25
Casco bigelowi	50
Maera danae	22.57
Melita dentata	22.25.67
M. quadrispinosa	22
Monoculodes edwardsi	21.22.46
M. norvegicus	67
M. tuberculatus	22
M. longirostris	22

Table 7 (cont'd.)

Species	Station numbers
Paroediceros lynceus	12
Westwoodilla caecula	22.67
Photis macrocoxa	22.35
P. reinhardi	77
Podoceropsis nitida	10.12.13.77.78.79.84.86
P. inaequistylis	8.58.66
Protomedia fasciata	67
Phoxocephalus holbolli	18.22.67.73.96
Pleustes panoplus	12.21.22.67
Pleusymtes glaber	22.38.41
Dyopedos arctica	12.22.66.67.77.78.86
D. spinosissima	22.77.95
Parodulichia typica	22
Pontogeneia inermis	26.41.49.89.96
Metopella angusta	67
M. carinata	22
M. bruzeli	67
Stenula peltata	77.78.79
Stenothoe brevicornis	67
Syrrhoe crenulata	12.22.67
Rhachotropis lobata	22
Proboloides nordmanni	22
Achelia scabra	22.62
Nymphon grossipes	12.13.21.22.77
N. longitarse	94
N. hirtipes	22
Pycnogonum littorale	65.66
Aeginina longicornis	12.13.25.31.36.46.58.62.66.73.77.78.79.84. 86.89.94.95
Caprella linearis	96
Diastylis rathkii	13.21.79.86.95
D. quadraspinosa	12.79.86.95
Lamprops quadriplicata	12
ECHINODERMS	
Asterias forbesii	1.21.22.25.30.31.34.39.41.43.48.58.66.68
A. vulgaris	1.2.3.7.8.10.11.13.14.15.17.18.19.20.21.22 .24.25.26.27.28.30. 31.32.34.35.36.38.39.40.41.42.43.44.45.46. 47.48.50.54.56.57. 58.59.60.61.63.66.70.72.73.77.78.79.80.82. 84.86.89.96
Cucumaria frondosa	3.6.12.13.36.49.53.55.65.67.68.71
Leptasterias tenera	38.40.43
Henricia sanguinolenta	2.3.7.9.10.11.12.13.16.17.18.19.20.22.24.2 5.26.27.30.31.32.35. 36.39.40.42.43.45.46.47.48.49.50.56.61.65. 67.68.70.71.72.73. 78.79.80.82.86.89.93.96.
Leptasterias polaris	3.12
Ophiopholis aculeata	3.7.8.9.10.13.17.18.19.20.21.22.26.28.35.3 6.48.53.58.65.66.67. 68.80.85.96
Ophiura robusta	12.13.14.19.22.77.86.93.94.95.96
O. sarsi	11.13.21.24.72.73.78.79.84.86
Strongylocentrotus droebachiensis	Refer Table 8
Echinarachnius parma	1.2.3.9.10.11.13.14.15.16.18.19.20.21.22.2 4.25.26.27.28.29.30. 31.32.34.35.36.38.42.44.45.46.48.49.50.53. 56.57.71.72.73.79.80. 81.82
Ctenodiscus crispatus	42.77.84.86.93.94
Solaster papposus	3.6.12.22.77.78.79.86.93.94
Molpadia oolitica	93
Gorgonocephalus sp.	36.43.46.93
Solaster endeca	2.3.78.93
Psolus fabricii	6.8.11.12
P. phantapus	17
PORIFERA	
Clathria delicata	3.13.22.27.35.36.42.61.63.65.73
Cliona celata	39.40.43

Table 7 (cont'd.)

Species	Station numbers
Esperia lingua	20.45.46.57.65.66
Grantia ciliata	46.50.62.67
Haliclona oculata	2.9.12.16.17.24.26.34.41.45.70.78.79.82.84
Isodictya deichmannae	25.40.47.65
Myxilla incrustans	28.38.44.72
Mycale ovulum	13.18.22.41.59.61.66.67.68.73
Polymastia mammilaris	19.22.25.27.49.61.62.65.74
P. robusta	1.2.7.18.19.20.21.24.25.28.43.49.53.57.58.62.79.80.81.89
Trichostemma hemisphericum	34.48.62
CNIDARIANS	
Hydroids	2.3.6.8.10.12.13.14.18.19.21.24.26.27.28.29.30.31.34.36.38.39.
Duva multiflora	40.42.43.44.46.47.49.59.60.61.65.66.67.68.70.71.72.73.74.77.78.
Abietinaria abietina	80.85.86.89.93.94
Halecium flexile	
Campanularia angulata	
C. groelandica	
Diphasia fallax	
Sertularella fusiformis	
Lafoea dumosa;	
L. gracillima	
Hydrallmania falcata	
Thuiaria cupressina;	
Selaginopsis mirabilis	
Cyanea sp.	3.44.49.54.55
C. capillata	56.60.95
Actinauge sp.	77
Bunodactis stella	12.78.84.86
Edwardsia sp.	77
Metridium dianthus	2.3.34.35.45.50.56
M. senile	7.10.17.19.22.28.42.43.44.65.77.79.80.89
Tealia felina	6.7.22.27.65
ECTOPROCTS	
Stomphia coccinea	38.48.68.73.78.79.84.89
Bryozoans	2.3.6.7.9.12.13.18.19.21.24.25.27.28.32.34.36.38.39.40.41.42.43.
Dendrobeania murrayana	44.47.49.52.56.61.62.65.66.67.68.70.71.73.77.78.80.89.93.94.96
Eucratea loricata	
Membranipora pilosa	
Bugula turrita	
SIPUNCULIDS	
Phascolosoma eremita	12.14.33.58.78.79.86
ANNELIDS	
Worms	2.6.7.8.9.10.12.15.17.18.24.26.27.28.30.31.32.34.38.39.40.41.43.
Spirorbis borealis	44.45.46.47.49.50.53.54.55.58.60.63.65.67.68.69.70.71.73.74.77.
Aphrodita hastata	78.79.80.81.82.85.89.94.96
Potamilla reinformis	
Sternaspis scutata	
CHORDATES	
Pelonaia corrugata	59.73.77.79.86
Molgula sp.	9.10.12.43.46.78
Halocynthia pyriformis	16.17.18.19

Table 8. Size (mm) and number of sea urchins (Strongylocentrotus droebachiensis and lobsters (Homarus americanus) in beam trawl and scallop dredge samples.

Station no.	Sea urchins N	Sea urchins Mean size	Lobsters (N) Sht[a]	Lobsters (N) Cnr[a]	Lobsters (N) Mkt[a]	Station no.	Sea urchins N	Sea urchins Mean size	Lobsters (N) Sht[a]	Lobsters (N) Cnr[a]	Lobsters (N) Mkt[a]
1	0	-	4	1	0	49	0	49.0	0	0	0
2	44	25.8	3	3	0	50	0	-	0	0	0
3	30	23.0	0	2	0	51	0	-	0	0	0
4	10	24.6	0	0	0	52	0	-	0	0	0
5	377	40.7	0	0	0	53	0	-	0	0	0
6	324	33.1	0	0	0	54	5	x	0	0	0
7	864	48.4	4	2	0	55	0	-	0	0	0
8	790	47.1	6	1	0	56	0	-	0	1	0
9	366	41.8	0	0	0	57	0	-	0	1	0
10	0	-	0	0	0	58	0	-	0	0	0
11	270	25.6	0	0	0	59	0	-	0	0	0
12	211	45.8	0	0	0	60	2	x	0	0	0
13	0	-	0	0	0	61	0	-	0	0	0
14	1	29.8	0	0	0	62	0	45.0	0	0	0
15	3	28.7	7	1	0	63	0	-	0	0	0
16	91	54.4	31	2	0	64	0	-	0	0	0
17	259	41.2	19	3	0	65	0	32.2	1	1	1
18	182	44.0	18	11	0	66	0	24.5	0	0	1
19	566	38.5	5	6	0	67	518	23.8	2	0	0
20	24	31.2	0	0	1	68	353	35.5	0	0	0
21	0	-	0	0	0	69	1348	42.5	0	1	0
22	1536	x	0	0	0	70	168	42.0	1	1	0
23	0	-	4	0	0	71	0	-	0	1	0
24	24	x	3	0	0	72	0	40.0	0	1	0
25	179	x	0	0	0	73	0	60.0	2	1	0
26	77	x	2	2	0	74	0	-	0	1	0
27	5	x	1	1	0	75	0	-	0	0	0
28	0	-	0	0	0	76	8	47.3	0	0	0
29	0	-	0	1	0	77	0	50.0	0	0	0
30	0	-	8	4	1	78	4	49.4	0	0	0
31	0	-	20	1	0	79	46	47.1	0	0	0
32	5	22.5	9	0	0	80	312	47.2	13	6	2
33	0	12.5	12	1	0	81	0	17.5	3	0	1
34	4	22.5	0	0	0	82	72	58.6	11	6	0
35	11	30.8	8	1	0	83	1	44.2	2	0	0
36	4	x	0	0	0	84	2	38.6	0	0	0
37	6	x	0	1	0	85	64	36.4	2	0	0
38	0	-	0	1	0	86	0	-	0	0	0
39	0	-	1	3	0	87	0	47.5	1	1	0
40	0	-	0	1	0	88	1	42.5	8	2	5
41	0	17.5	0	0	0	89	3	49.0	5	1	1
42	0	-	0	0	0	90	3	52.2	0	0	0
43	0	-	0	0	0	91	8	57.5	0	0	0
44	0	-	0	0	0	92	0	17.5	0	0	0
45	5	35.5	0	0	0	93	0	57.5	0	0	0
46	0	-	0	0	0	94	6	50.8	0	0	0
47	12	12.5	0	0	0	95	16	x	0	0	0
48	16	24.2	0	1	1	96	88	49.1	18	3	0

[a]Sht = shorts, carapace length - <63.5 mm
Cnr = Canners, carapace length - 63.5-80.0 mm
Mkt = Markets, carapace length - 81+ mm
x = no measurements taken

Table 9. List of fishes recorded from the beam trawl/scallop dredge survey.

Species	Stations Area A	B	C	D
AGONIDAE				
Aspidophoroides monopterygius (Bloch) (Alligatorfish)	5.10.12.13.22			76.77.84.93.94
BOTHIDAE				
Scophthalmus aquosus (Mitchill) (Windowpane flounder)		29.31.33.36.37. 44.45	50.55.56.63. 64.72	88
COTTIDAE				
Artediellus uncinatus (Reinhardt) (Arctic hookear sculpin)	5			
Hemitripterus americanus (Gmelin) (Sea raven)	1.7.24	38.40.44	63.64	83.85.87.88
Myoxocephalus scorpius (Linnaeus) (Shorthorn sculpin)	2.18.22		66	92
M. aeneus (Mitchill) (Grubby)	16.18	32.38.39.42.43. 48	49	
M. octodecemspinosus (Mitchill) (Longhorn sculpin)	1.2.5.7.10.11.14. 15.16.17.18.19.20. 21.22	26.27.28.30.31. 32.33.34.35.36. 37.38.42.43.44. 45.46	49.50.53.54.55. 56.58.59.60.61. 62.63.65.66.67. 70.71	73.74.75.76.77.78. 79.80.83.84.85.86. 87.88.91.92.93
Triglops murrayi Günther (Mailed sculpin)	5			
CYCLOPTERIDAE				
Liparis liparis (Linnaeus) (Striped seasnail)	13			78.79.86
L. atlanticus (Jordan and Evermann) (Atlantic seasnail)	11	28		
LABRIDAE				
Tautogolabrus adspersus (Walbaum) (Cunner)	1.2.3.7.8.16.17. 18	27.32.33.35.38. 39.40.45.48	49.50.56.62. 69	73.85.87.96
GADIDAE				
Enchelyopus cimbrius (Linnaeus) (Fourbeard rockling)			53.55.59.61	74.84.94.95
Gadus morhua (Linnaeus)[a] (Atlantic cod)	2.11.13.14.17	26.27.(28)(29) (30)36.42	60.(66)	73.75.(76)77. 78.(79)84
Microgadus tomcod (Walbum) (Atlantic tomcod)		26.28.30	59.	
Urophycis chuss (Walbum)[a] (Squirrel hake)		(35)	54.55.56.(59)	(74)(76)(79)83.
OSMERIDAE				
Osmerus mordax (Mitchill) (American smelt)	15	26.30.36.42. 45	49.55.56.58. 59.63.65	84

Table 9. (cont'd.)

Species	Stations Area A	B	C	D
PHOLIDAE				
Pholis gunnellus (Linnaeus) (Rock gunnel)		33.37		
PLEURONECTIDAE				
Hippoglossoides platessoides (Fabricius) (American plaice)	9.12.13		51.53.54.58.59.60.61.62.63.66.72	73.74.75.76.77.78.79.84.86.87.88.90.91.93.94.95
Limanda ferruginea (Storer) (Yellowtail flounder)	1.2.3.4.5.6.10.11.12.13.14.15.16.20.21	25.29.32.36.37.44	51.53.54.57.58.59.60.61.63.65.71.72	73.74.78.80.82 87.88.96
Liopsetta putnami (Gill) (Smooth flounder)	17.20	40		
Pseudopleuronectes americanus (Walbum) (Winter flounder)	1.2.10.13.14.17.18.19	27.30.31.32.33.34.35.36.37.38.39.40.41.42.43.44.45.47.48	49.50.51.52.53.54.55.56.57.58.59.60.61.62.63.64.65.66.67.71.72	73.74.80.81.82.83.85.87.88.90
RAJIDAE				
Raja erinacea Mitchill (Little skate)	17	26.29.33.34 35.36.44.45	65.71.72	80.83
R. ocellata Mitchill (Winter skate)	15.18	25		
R. radiata Donovan (Thorny skate)				73
R. senta Garman (Smooth skate)				82
STICHAEIDAE				
Cryptacanthodes maculatus Storer (Wrymouth)			51.53.55.58.59.60.61	84
Lumpenus lumpretaeformis (Walbaum) (Snake blenny)	12		58.63.72	74.76.79.84.86.91.93.94
L. maculatus (Fries) (Daubed shanny)			52	91.93
Ulvaria subbifurcata (Storer) (Radiated shanny)	3.5			
ZOARCIDAE				
Lycodes vahlii Reinhardt (Vahl's eelpout)	21			
Macrozoarces americanus (Bloch & Schneider) (Ocean pout)	4	27.40.42.43.44	67.72	75.84

[a]For Atlantic cod and squirrel hake, bracketed station numbers are extracted from catch record sheets.

Table 10. List of plants from Stations 1-48 only recorded from the beam trawl/scallop dredge.

Family, species	Station number																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Higher plants (Spermatophyta)																								
Zostera marina	.	.	.	.	3	.	.	.	.	3	.	3	3	.	.	1	1	.	.	.	.	.	.	.
Chlorophyta																								
Chaetomorpha sp.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cyanophyta[a]																								
Calothrix sp.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lyngbya sp.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phaeophyta																								
Laminaria longicruris	.	3	.	.	3	.	.	3	3	1	.	.	1	.	.	3	3	.	.	.	.	.	.	.
Ectocarpus siliculosus	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.
Fucus serratus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Fucus sp.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Agarum cribrosum	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.
Sphacelaria cirrosa	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.
S. plumosa	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Desmarestia aculeata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Chordaria flagelliformis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Giffordia ovata	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Haplospora globosa	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Halopteris scoparia	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Sphaerotrichia divaricata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rhodophyta																								
Phyllophora pseudoceranoides	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
P. truncata	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phyllophora sp.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Rhodomela confervoides	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Palmaria palmata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Phycodrys rubens	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cystoclonium purpureum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Polysiphonia nigrescens	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
P. urceolata	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
P. flexicaulis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
P. elongata	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Polysiphonia sp.	.	.	.	.	.	.	.	.	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.	.
Polyides rotundus	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ceramium deslongchampii v. hooperi	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
C. elegans	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
C. rubrum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ceramium sp.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bonnemaisonia hamifera (Trailliella)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ahnfeltia plicata	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.
Scagelia corallina	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Antithamnion cruciatum	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Antithamnion sp.	.	.	.	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Pterothamnion plumula	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Antithamnionella floccosa	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Callithamnion hookeri	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Callithamnion sp.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Goniotrichum alsidii	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hildenbrandia rubra	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Frimbrifolium lumbricalis	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Chondrus crispus	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.
Audouinella sp.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

[a]Older "classical" genera are retained for the ecophenes reported here.

Species abundance recorded as : 1 = present, 2 = common, 3 = abundant.

Station number																							
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
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Table 11. Volume measurements (mL) of algae taken in the beam trawl/scallop dredge samples (number of species of Rhyodophyta indicated).

Station no.	Total volume (all species)	Laminaria	Rhyodophyta	Station no.	Total volume (all species)	Laminaria	Rhyodophyta
1	4200	0	p[a] 1 sp.	49	4590	750	2960 13 spp.
2	320	320	0	50	270	10	250 6 spp.
3	0	0	p	51	0	0	0
4	0	0	0	52	20	10	p 1 sp.
5	17	p	0	53	400	0	385 10 spp.
6	0	0	0	54	350	p	p 1 sp.
7	0	0	0	55	510	310	p 1 sp.
8	15100	15000	50 5 spp.	56	40	0	20 6 spp.
9	9402	9000	402 6 spp.	57	960	960	0
10	100	p	p 1 sp.	58	110	0	20 2 spp.
11	0	0	0	59	150	0	p 1 sp.
12	24	0	p 1 sp.	60	95	0	p 5 spp.
13	75	p	0	61	30	0	p 1 sp.
14	0	0	0	62	54	0	p 1 sp.
15	0	0	0	63	315	p	p 4 spp.
16	32	p	0	64	300	270	p 3 spp.
17	1920	1920	0	65	3750	2550	495 10 spp.
18	0	0	0	66	245	0	87 5 spp.
19	0	0	0	67	1440	0	1152 6 spp.
20	0	0	0	68	0	0	0
21	0	0	0	69	0	0	0
22	0	0	0	70	140	0	p 4 spp.
23	0	0	0	71	0	0	0
24	0	0	0	72	32000	16000	6000 10 spp.
25	924	870	54 3 spp.	73	500	0	420 8 spp.
26	0	0	0	74	30	0	20 5 spp.
27	0	0	0	75	5	0	p 1 sp.
28	3000	3000	p 3 spp.	76	40	0	p 1 sp.
29	0	0	0	77	10	0	p 1 sp.
30	250	200	50 1 sp.	78	500	0	p 6 spp.
31	0	0	0	79	805	0	p 7 spp.
32	3800	1750	2050 11 spp.	80	122	0	p 8 spp.
33	0	0	0	81	8820	8000	32 7 spp.
34	2420	1500	920 7 spp.	82	3120	1800	120 7 spp.
35	410	250	p 3 spp.	83	6	0	6 2 spp.
36	75	30	5 1 sp.	84	10	0	0
37	7330	250	7050 6 spp.	85	0	0	0
38	19400	1400	18000 7 spp.	86	200	0	40 7 spp.
39	5040	2800	2240 8 spp.	87	20	0	0
40	5135	400	1135 9 spp.	88	0	0	0
41	20610	300	20250 8 spp.	89	5400	1700	2870 17 spp.
42	0	0	0	90	10	p	p 5 spp.
43	0	0	0	91	120	0	p 2 spp.
44	4230	700	3500 7 spp.	92	0	0	0
45	1174	725	430 11 spp.	93	0	0	0
46	0	0	0	94	15	0	0
47	0	0	0	95	8	0	0
48	24800	4800	18000 10 spp.	96	26000	11000	15000 21 spp.

[a]p - present but too small to measure.

Table 12. Percentage of samples with algal material.

Area	Number of stations	Number of stations with algae	% of total
A	24	10	41.7
D	24	21	87.5
Total	48	31	64.6
B	24	15	62.5
C	24	20	83.3
Total	48	35	72.9

Table 13. Sediment distribution in Northumberland Strait from grab and core samples.

Stn.	van Veen grab	Color	Core length (cm)	Color	Sediment type of core	Bottom description
1	Sandstone	Grey	-			Rocky bottom (grey sandstone)
2	Gravel, sand, mud		27.5		Fine gravel, sand	Sand over gravel
3	Sand, sandstone	Brown/grey	-			Sand over rocky bottom (grey sandstone)
4	Sand		40.0		Sand, shells	Sand and shell fragments
5	Gravel, sand, mud					Gravel and sand
6	Gravel, mud	Brown	-			Mud over rocky bottom
7	None		-			Rocky bottom (red sandstone)
8	None		-			Rocky bottom (red sandstone)
9	None		-			Rocky bottom (red sandstone)
10	Gravel, sand	Brown	52.0	Brown	Sand	Sand
11	Gravel, sand, shell	Brown	17.0	Brown	Sand, with shelly layers	Gravel, sand, shell fragments
12	Sand, mud		40.0			Sandy silt
13	Sand, mud, clay		35.0		Sand, with shelly layers	Sand
14	Sand		24.0		Sand	Sand
15	Sand		17.0		Sand	Sand over rocky bottom (grey sandstone)
16	Sandstone	Grey	20.0		Sand	Sand over rocky bottom (grey sandstone)
17	Sandstone		-			Rocky bottom (grey sandstone)
18	Sandstone, sand		-			Rocky bottom
19	Sandstone, shells		-			Rocky bottom
20	Sandstone		-			Rocky bottom
21	Sand, mud		40.0		Sand	Sand mud
22	Sandstone, sand, shells		-			Gravel over rocky bottom
23	Sandstone, sand, shells		-			Sand over rocky bottom
24	Sand		-			Sand over rocky bottom
25	Sandstone, sand		-			Rocky bottom
26	Sand, shells		46.0		Sand	Sand with sandstone cobbles
27	Sandstone, mud	Red	-			Mud with sandstone cobbles
28	Sand		43.0		Sand	Sandy bottom
29	Sand		52.0		Sand with shelly layers	Sandy bottom
30	Sand		36.0	Red	Sand with shelly layers	Sandy bottom
31	Sand		Washed out		Fine sand	Sandy bottom
32	Sandstone		-			Rocky bottom (sandstone cobbles and boulders)
33	Mud	Grey/brown	12.0,24.0		Mud	Mud
34	Sand, shells, mud		15.0		Sandy clay	Sand over clay
35	None		14.5			Rocky bottom
36	Sandstone, sand, shells		48.0		Sand and shell fragments	Sandy bottom with pebbles and shells
37	Fine sand, shells		11.0		Sand and shells	Sandy bottom with broken shells
38	Sandstone, gravel, sand	Red	10.5	Red	Clay	Sand and gravel over sandstone bottom
39	Gravel, sand		25.0 32.0	Grey/red	Clay	4 grabs ranged from coarse gravel to sand, to mud and broken shell
40	Gravel, sand		25.0		Fine sand and shelly layers	Gravelly sand
41	Fine sand, mud	Red	Washed out	Red	Fine sand	Fine sand
42	Silty sand	Red	25.0	Red	Silty sand with shelly layers	Fine sand
43	Gravel, sand		-			Sandy gravel bottom
44	None		21.0		Silty mud	Muddy bottom
45	Sand, mud, clay	Red	Washed out	Red		Silty sand
46	Sandstone, sand		-			Rocky bottom
47	Sandstone, sand, shells		10.0	Red	Silty sand	Silty sand over rocky bottom or red sandstone
48	Gravel, shell	Red	5.0	Red	Gravel	Red sandstone gravel

Table 13. (cont'd.)

Stn.	van Veen grab	Color	Core length (cm)	Color	Sediment type of core	Bottom description
49	Gravel, sand, mud		45.0		Sand	Sand
50	Sand, mud	Red	32.0	Red	Sand with shell layers	Sand with red sandstone pebbles
51	None		167.0	Red/grey	Clay	Mud over clay
52	Mud, clay	Red	223.0	Red/grey	Clay	Mud over clay
53	Mud, clay	Red	224.0	Red/grey	Clay	Mud over clay
54	Mud, clay	Red	105.0,227.5	Red	Clay	Mud over clay
55	Mud, clay	Red	191.0,139.0	Red	Clay	Mud over clay
56	Sand, clay	Red	15.5,43.5			Sand over clay
57	Pebbles, mud, shells		-			Mud over rocky bottom
58	Gravel, shells		109.0		Sand with gravel and shells	Gravel bottom with broken shells
59	Mud		160.0		Silt, clay	Muddy bottom
60	Mud		217.0		Mud, clay	Muddy bottom
61	Mud		206.0		Mud	Muddy bottom
62	Mud		202.0		Mud	Muddy bottom
63	Mud		211.5		Mud	Muddy bottom
64	Mud		106.0		Mud	Muddy bottom
65	Pebbles, sand		37.0		Gravel, sand, shells	Gravel bottom with pebbles
66	Mud		16.0,10.0,11.0		Sand	Sand over rocky bottom
67	Gravel, mud		25.0,60.0		Gravel, mud	Muddy gravel
68	Gravel, sand, mud		80.0,20.0		Mud, clay	Muddy gravel
69	Pebbles, gravel	Grey	-			Rocky bottom
70	Pebbles, gravel		-			Rocky bottom
71	Sand		-			Sand
72	None		-			Rocky bottom
73	Sand		-			Sand
74	Mud, clay	Red/brown	104.0	Red/brown	Mud, clay	Mud over clay
75	Mud, clay		103.0	Red/brown	Mud, clay	Mud over clay
76	Mud		53.0			Mud
77	Sand, mud		42.0		Sand	Mud over sand
78	Sand, mud		-			Sand
79	Sand, mud		42.0,30.0		Sand, mud	Muddy sand
80	Gravel, sand		39.0	Black	Mud	Muddy gravel
81	Gravel, sand, shell		-			Rocky bottom
82	Sandstone pebbles	Red	-			Rocky bottom (red sandstone)
83	Sandstone pebbles	Red	-			Rocky bottom (red sandstone)
84	Mud		50.0		Mud	Muddy bottom
85	Pebbles, gravel		-			Rocky bottom (red sandstone)
86	Mud		21.0		Sand	Muddy sand
87	Pebbles, mud		109.0		Mud	Mud with grey sandstone pebbles
88	Sand	Grey	Washed out		Sand, shell	Fine sand with shell fragments
89			-			Rocky bottom
90			-			Rocky bottom
91	Mud		186.0		Mud	Muddy bottom
92	Sandstone, pebbles	Grey	-			Rocky bottom
93	Mud	Red	53.0,85.0		Silt, clay	Mud over clay
94	Mud	Red	204.5	Red	Silt, clay	Mud over clay
95	Mud	Red	226.5		Silt, clay	Mud over clay
96	Sandstone, mud	Red	-			Rocky bottom (red sandstone)

Table 14. Size-frequency distributions of van Veen sediment samples given as percent gravel, sand, and silt.

Station	Gravels (%)	Sands (%)	Silts (%)	Excess gravels (%)	Excess silts (%)
1	5.33	93.88	0.78	5.33	0.00
2	0.07	97.54	2.39	0.00	0.00
3	8.59	91.29	0.12	8.59	0.00
4	0.11	99.83	0.06	0.00	0.00
5	34.26	62.20	3.54	34.26	0.00
6	34.97	60.40	4.63	30.81	0.00
7	--	--	--	--	--
8	--	--	--	--	--
9	1.24	98.51	0.25	0.00	0.00
10	7.37	89.29	3.34	7.37	0.00
11	9.24	89.92	0.84	9.24	0.00
12	0.19	83.47	16.34	0.00	0.00
13	8.80	90.20	1.00	8.80	0.00
14	0.27	99.32	0.41	0.00	0.00
15	0.00	99.99	0.01	0.00	0.00
16	0.39	99.46	0.15	0.00	0.00
17	0.02	99.60	0.38	0.00	0.00
18	21.89	77.57	0.54	21.89	0.00
19	--	--	--	--	--
20	7.15	92.68	0.17	5.95	0.00
21	1.41	98.55	0.04	0.00	0.00
22	1.72	94.04	4.24	0.00	0.00
23	0.59	98.99	0.42	0.00	0.00
24	--	--	--	--	--
25	50.01	49.58	0.41	50.01	0.00
26	39.43	60.02	0.54	39.43	0.00
27	54.03	41.36	4.61	9.30	0.00
28	3.09	95.62	1.29	0.00	0.00
29	0.94	98.16	0.89	0.00	0.00
30	0.11	97.33	2.56	0.00	0.00
31	0.63	98.19	1.17	0.00	0.00
32	10.25	88.98	0.77	0.00	0.00
33	0.00	63.96	36.04	0.00	14.23
34	0.09	85.23	14.68	0.00	8.01
35	0.63	62.78	36.59	0.00	20.27
36	1.18	97.71	1.11	0.00	0.00
37	16.35	83.34	0.31	16.35	0.00
38	29.47	69.31	1.21	29.47	0.00
39	44.48	49.10	6.42	44.48	0.00
40	3.72	96.09	0.19	0.00	0.00
41	0.04	95.37	4.59	0.00	0.00
42	0.02	92.89	7.09	0.00	5.45
43	37.92	60.02	2.07	30.42	0.00
44	0.25	99.44	0.31	0.00	0.00
45	0.25	83.75	16.00	0.00	8.26
46	19.04	73.57	5.23	19.04	0.00
47	29.50	65.93	4.57	29.50	0.00
48	25.57	70.31	4.12	15.69	0.00
49	0.08	49.50	50.42	0.00	32.74
50	0.18	87.06	12.76	0.00	8.58
51	0.00	27.13	72.87	0.00	47.95
52	0.00	24.85	75.15	0.00	51.45
53	0.27	31.98	67.76	0.00	38.49
54	0.16	18.23	81.61	0.00	49.01
55	0.00	19.02	80.98	0.00	61.18
56	0.84	97.34	1.82	0.00	0.00
57	54.63	36.82	8.56	54.63	7.01
58	7.20	69.91	22.89	7.20	18.45
59	0.50	61.91	37.59	0.00	30.89
60	0.01	18.34	81.65	0.00	53.62
61	0.00	47.84	52.16	0.00	38.93
62	0.59	51.67	47.74	0.00	35.35
63	0.05	24.83	75.12	0.00	46.56
64	0.00	67.52	32.48	0.00	14.77
65	17.50	79.55	2.95	17.50	0.00
66	21.59	58.92	19.50	21.59	13.02

Table 14 (cont'd.)

Station	Gravels (%)	Sands (%)	Silts (%)	Excess gravels (%)	Excess silts (%)
67	20.12	70.35	9.54	20.12	7.94
68	21.59	71.04	7.37	21.59	5.54
69	—	—	—	—	—
70	—	—	—	—	—
71	0.80	99.17	0.03	0.00	0.00
72	1.69	77.60	20.72	0.00	15.75
73	5.69	93.97	0.34	5.69	0.00
74	0.00	26.12	73.88	0.00	54.77
75	0.00	6.38	93.62	0.00	83.30
76	1.00	77.37	21.63	0.00	18.00
77	0.55	82.73	16.72	0.00	8.68
78	0.09	83.00	16.91	0.00	12.47
79	0.00	79.29	20.71	0.00	15.19
80	13.89	81.30	4.81	13.89	0.00
81	38.52	60.50	0.99	38.52	0.00
82	—	—	—	—	—
83	—	—	—	—	—
84	0.00	71.81	28.19	0.00	18.52
85	—	—	—	—	—
86	6.00	87.29	6.72	6.00	6.70
87	0.77	46.03	53.20	0.00	36.62
88	—	—	—	—	—
89	—	—	—	—	—
90	—	—	—	—	—
91	0.00	9.08	90.92	0.00	66.79
92	47.03	44.69	8.28	23.51	6.55
93 1	0.48	59.65	39.87	0.00	15.76
93 2	0.00	68.43	31.57	0.00	18.49
94	0.00	25.61	74.39	0.00	37.72
95	0.00	23.82	76.18	0.00	40.76
96	—	—	—	—	—

Table 15. Size frequency distributions of van Veen sediment samples at each station.

Stn. No. PHI	1 Wt.%	2 Wt.%	3 Wt.%	4 Wt.%	5 Wt.%	6 Wt.%	7 Wt.%	8 Wt.%	9 Wt.%	10 Wt.%	11 Wt.%	12 Wt.%
-2.5	0.00	0.00	0.00	0.00	0.00	30.81	a	a	0.00	0.00	0.00	0.00
-2.0	0.00	0.00	0.00	0.00	0.00	2.33			0.00	0.00	0.00	0.00
-1.5	0.00	0.00	0.00	0.00	0.00	1.39			0.00	0.00	0.00	0.00
-1.0	5.33	0.07	8.59	0.11	34.26	0.44			1.24	7.37	9.24	0.19
-0.5	1.70	0.05	0.66	0.01	0.33	1.08			0.41	1.15	0.54	0.13
0.0	2.26	0.10	0.88	0.10	0.55	1.10			0.37	0.97	0.59	0.11
0.5	5.54	0.32	1.70	0.75	0.56	1.91			0.79	1.06	0.89	0.28
1.0	9.76	1.25	4.54	8.42	1.49	3.79			2.33	2.98	2.77	2.32
1.5	23.23	7.50	22.41	40.12	6.15	9.55			10.70	18.02	13.09	3.77
2.0	33.66	4.76	45.94	31.84	15.56	13.33			22.77	23.85	17.59	4.24
2.5	13.07	69.47	12.30	12.48	19.68	12.98			33.03	17.69	24.30	4.24
3.0	3.28	9.54	2.49	5.31	11.19	12.89			23.32	16.62	23.27	17.47
3.5	1.00	3.14	0.30	0.94	3.53	3.03			4.35	5.32	5.70	30.23
4.0	0.38	1.41	0.06	0.06	3.17	0.76			0.42	1.63	1.17	20.66
4.5	0.26	1.03	0.10	0.02	2.06	1.16			0.08	1.48	0.57	11.60
5.0	0.52	1.36	0.02	0.04	1.48	3.47			0.17	1.86	0.27	4.74
Mode	2.000	2.500	2.000	1.500	-1.000	-2.500			2.500	2.000	2.500	3.500
mean	1.396	2.266	1.524	1.566	1.063	-0.532			2.147	1.928	2.002	3.273
SD	0.929	0.445	0.808	0.543	1.790	3.882			0.623	1.146	1.113	0.863
	13	14	15	16	17	18	19	20	21	22	23	24
-2.5	0.00	0.00	0.00	0.00	0.00	0.00	a	5.95	0.00	0.00	0.00	a
-2.0	0.00	0.00	0.00	0.00	0.00	0.00		0.60	0.00	0.00	0.00	
-1.5	0.00	0.00	0.00	0.00	0.00	0.00		0.27	0.00	0.00	0.00	
-1.0	8.80	0.27	0.00	0.39	0.02	21.89		0.33	1.41	1.72	0.59	
-0.5	0.40	0.05	0.04	0.25	0.00	2.85		0.91	0.12	1.56	0.11	
0.0	0.20	0.04	0.13	0.34	0.01	2.21		1.83	0.07	1.05	0.26	
0.5	0.24	0.06	1.00	0.97	0.09	4.40		4.60	0.17	1.36	1.76	
1.0	0.50	0.21	6.22	5.30	0.78	11.86		12.57	1.75	3.79	15.25	
1.5	2.29	2.36	31.18	35.98	5.79	28.22		28.91	8.51	13.53	49.16	
2.0	5.71	10.39	50.28	37.13	17.38	16.83		23.95	21.38	31.69	26.25	
2.5	8.38	21.93	9.98	12.47	27.91	9.07		16.51	56.99	30.03	3.17	
3.0	33.20	48.82	1.10	4.77	31.90	1.71		2.99	8.47	6.84	2.75	
3.5	35.41	13.93	0.06	1.84	14.71	0.28		0.30	0.82	2.76	0.26	
4.0	3.85	1.52	0.00	0.41	1.01	0.14		0.10	0.28	1.42	0.01	
4.5	0.92	0.40	0.00	0.10	0.20	0.22		0.06	0.03	2.50	0.14	
5.0	0.08	0.01	0.01	0.05	0.18	0.32		0.11	0.01	1.74	0.28	
Mode	3.500	3.000	2.000	2.000	3.000	1.500		1.500	2.500	2.000	1.500	
Mean	2.669	2.570	1.568	1.620	2.412	0.620		1.360	2.061	1.885	1.361	
SD	1.097	0.507	0.431	0.500	0.616	1.321		1.263	0.468	0.840	0.476	
	25	26	27	28	29	30	31	32	33	34	35	36
-2.5	0.00	0.00	17.10	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00
-2.0	0.00	0.00	13.10	0.00	0.00	0.00	0.00	4.27	0.00	0.00	0.00	0.00
-1.5	0.00	0.00	14.53	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00	0.00
-1.0	50.01	39.43	9.30	3.09	0.94	0.11	0.63	2.11	0.00	0.09	0.63	1.18
-0.5	6.59	6.13	7.87	1.55	0.53	0.04	0.83	2.64	0.00	0.03	0.12	0.33
-0.0	3.21	3.15	4.17	2.53	0.64	0.07	3.65	2.70	0.05	0.03	0.17	0.38
0.5	2.83	2.38	2.73	3.12	1.57	0.40	14.09	6.16	0.04	0.03	0.21	0.89
1.0	4.74	3.79	2.91	4.67	3.71	1.56	38.81	14.20	0.13	0.03	0.79	3.74
1.5	11.68	13.16	6.04	10.74	24.09	5.52	28.98	21.16	0.56	0.40	3.71	14.48
2.0	12.51	16.48	7.20	31.71	46.10	16.46	9.54	13.08	1.25	0.92	6.42	20.81
2.5	3.00	7.92	3.72	35.81	19.06	42.67	1.94	9.29	1.78	1.38	6.06	32.25
3.0	2.49	5.14	3.34	4.20	2.24	27.82	0.23	14.49	2.78	32.35	13.71	18.28
3.5	1.98	1.61	2.25	0.78	0.17	2.37	0.11	4.00	35.63	45.07	25.22	4.91
4.0	0.55	0.27	1.15	0.51	0.06	0.42	0.01	1.25	21.74	5.00	6.37	1.64
4.5	0.33	0.18	1.60	0.57	0.89	1.15	0.61	0.43	21.81	6.67	16.32	1.11
5.0	0.08	0.36	3.01	0.72	0.00	1.41	0.56	0.35	14.23	8.01	20.27	0.00
Mode	-1.000	-1.000	-2.500	2.500	2.000	2.500	1.000	1.500	3.500	3.500	3.500	2.500
Mean	-0.219	0.319	-0.608	1.768	1.683	2.288	0.910	1.341	3.757	3.245	3.431	2.075
SD	1.371	1.454	2.148	.0.807	0.517	0.540	0.559	1.441	0.652	0.618	1.094	0.736

Table 15 (cont'd.)

Stn. No. PHI	37 Wt.%	38 Wt.%	39 Wt.%	40 Wt.%	41 Wt.%	42 Wt.%	43 Wt.%	44 Wt.%	45 Wt.%	46 Wt.%	47 Wt.%	48 Wt.%
-2.5	0.00	0.00	0.00	0.00	0.00	0.00	30.42	0.00	0.00	0.00	0.00	15.68
-2.0	0.00	0.00	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	4.67
-1.5	0.00	0.00	0.00	0.00	0.00	0.00	2.81	0.00	0.00	0.00	0.00	3.14
-1.0	16.35	29.47	44.48	2.72	0.04	0.02	1.83	0.25	0.25	19.04	29.50	2.07
-0.5	3.76	6.63	8.68	4.15	0.03	0.06	3.12	0.37	0.11	3.35	9.40	3.46
0.0	2.21	4.34	5.23	5.43	0.09	0.07	3.32	0.90	0.11	2.08	5.64	3.13
0.5	2.09	4.29	4.39	7.20	0.15	0.14	3.44	1.95	0.11	1.88	4.46	3.39
1.0	5.06	6.81	3.97	10.43	0.18	0.18	4.22	5.94	0.19	4.30	5.99	4.47
1.5	20.44	17.98	6.62	32.27	0.38	0.48	11.20	23.99	0.71	20.40	10.65	14.45
2.0	38.19	16.49	7.06	29.71	1.06	1.24	19.89	55.48	4.14	28.98	17.25	19.61
2.5	10.27	9.04	5.34	6.07	2.78	2.38	11.27	10.42	22.17	9.22	8.77	14.17
3.0	1.03	2.78	4.69	0.69	59.17	53.36	2.19	0.35	34.52	3.45	2.56	3.96
3.5	0.19	0.65	2.08	0.09	27.05	30.00	0.93	0.03	15.43	1.44	0.89	2.65
4.0	0.10	0.30	1.05	0.04	4.49	4.98	0.44	0.01	6.26	0.62	0.32	1.03
4.5	0.11	0.18	1.52	0.07	2.25	1.64	0.47	0.31	7.74	0.95	4.45	1.82
5.0	0.20	1.03	4.90	0.12	2.34	5.45	1.60	0.00	8.26	4.29	0.12	2.30
Mode	2.000	-1.000	-1.000	1.500	3.000	3.000	-2.500	2.000	3.000	2.000	-1.000	2.000
Mean	0.812	0.532	0.111	1.111	2.950	2.989	-0.740	1.581	3.019	0.870	0.473	0.410
SD	1.297	1.385	1.809	0.873	0.414	0.516	3.217	0.457	0.862	1.656	1.558	2.298

	49	50	51	52	53	54	55	56	57	58	59	60
-2.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-1.0	0.08	0.18	0.00	0.00	0.27	0.16	0.00	0.84	54.63	7.20	0.50	0.01
-0.5	0.14	0.09	0.08	0.01	0.22	0.03	0.02	0.13	6.66	1.88	0.13	0.01
0.0	0.10	0.20	0.07	0.03	0.63	0.09	0.00	0.06	3.47	1.73	0.18	0.01
0.5	0.21	0.61	0.04	0.06	0.79	0.19	0.02	0.21	2.51	1.08	0.18	0.06
1.0	0.66	2.17	0.01	0.13	0.95	0.34	0.10	1.12	2.46	1.50	0.59	0.14
1.5	3.35	11.75	0.46	0.51	1.23	0.44	0.21	12.47	4.47	3.76	2.63	0.22
2.0	9.84	33.02	1.09	1.35	1.55	0.73	0.89	41.79	7.67	10.30	18.36	0.42
2.5	13.55	23.79	1.35	1.50	2.01	0.91	3.15	27.78	5.69	23.23	28.00	0.56
3.0	11.10	7.77	2.42	2.29	3.16	1.18	5.87	11.24	2.66	19.53	6.35	1.35
3.5	6.13	4.64	10.04	8.23	9.34	4.00	4.26	2.14	0.77	5.28	2.75	5.41
4.0	4.42	3.02	11.56	10.73	12.09	10.32	4.50	0.39	0.43	1.64	2.78	10.14
4.5	17.68	4.17	24.92	23.70	29.56	32.60	19.80	0.29	1.54	4.45	6.70	28.03
5.0	32.74	8.58	47.95	51.45	38.49	49.01	61.18	1.53	7.01	18.45	30.89	53.62
Mode	5.000	2.000	5.000	5.000	5.000	5.000	5.000	2.000	-1.000	2.500	5.000	5.000
Mean	3.609	2.344	4.270	4.315	4.124	4.402	4.375	1.976	-0.070	2.801	3.018	4.423
SD	1.189	1.041	0.640	0.639	0.855	0.516	0.666	0.527	1.809	1.716	1.244	0.507

	61	62	63	64	65	66	67	68	69	70	71	72
-2.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	a	a	0.00	0.00
-2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00
-1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00
-1.0	0.00	0.59	0.05	0.00	17.50	21.59	20.12	21.59			0.80	1.69
-0.5	0.04	0.06	0.00	0.05	3.42	3.53	4.78	6.35			3.02	0.10
0.0	0.01	0.08	0.00	0.10	2.49	2.63	3.54	4.98			7.73	0.12
0.5	0.02	0.14	0.02	0.14	3.56	2.93	3.80	5.47			13.70	0.17
1.0	0.32	0.37	0.05	0.14	7.95	4.21	4.77	6.91			21.35	0.48
1.5	1.38	1.49	0.23	0.27	18.23	8.79	11.33	10.06			32.85	1.40
2.0	3.92	5.68	0.94	0.71	21.92	12.50	23.35	12.15			17.37	3.48
2.5	7.50	12.97	1.71	1.52	10.31	10.62	11.57	10.57			2.17	18.17
3.0	12.93	13.42	3.19	6.58	3.36	5.41	4.01	8.36			0.77	35.98
3.5	15.72	11.55	7.78	36.62	4.75	4.84	2.07	4.31			0.16	17.27
4.0	5.99	5.91	10.92	21.39	1.51	3.46	1.13	1.89			0.04	0.43
4.5	13.23	12.40	28.56	17.71	1.16	6.48	1.60	1.83			0.03	4.97
5.0	38.93	35.35	46.56	14.77	1.79	13.02	7.94	5.54			0.00	15.75
Mode	5.000	5.000	5.000	3.500	2.000	-1.000	2.000	-1.000			1.500	3.000
Mean	3.828	3.625	4.287	3.715	0.934	1.631	1.009	0.986			0.948	3.183
SD	1.005	1.109	0.632	0.673	1.596	2.288	1.842	1.895			0.726	1.043

Table 15 (cont'd.)

Stn. No. PHI	73 Wt.%	74 Wt.%	75 Wt.%	76 Wt.%	77 Wt.%	78 Wt.%	79 Wt.%	80 Wt.%	81 Wt.%	82 Wt.%	83 Wt.%	84 Wt.%
-2.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	a	a	0.00
-2.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00
-1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00
-1.0	5.69	0.00	0.00	1.00	0.55	0.99	0.00	13.89	38.52			0.00
-0.5	1.51	0.03	0.00	0.32	0.20	0.07	0.00	2.12	8.55			0.02
0.0	1.70	0.05	0.00	0.50	0.17	0.11	0.02	1.86	11.38			0.10
0.5	14.35	0.11	0.03	1.15	0.26	0.21	0.04	2.37	15.40			0.74
1.0	55.90	0.30	0.07	2.07	0.58	0.37	0.55	4.27	10.11			0.68
1.5	12.43	0.87	0.29	4.22	1.26	0.86	1.12	7.75	6.72			1.52
2.0	4.99	1.64	0.66	6.44	2.61	1.79	1.93	12.14	4.15			2.60
2.5	1.97	2.47	1.06	9.04	10.11	8.94	3.94	27.07	2.03			6.61
3.0	0.51	3.95	1.50	20.50	29.18	36.88	32.50	17.17	1.16			13.36
3.5	0.37	7.83	1.48	27.98	27.17	26.11	31.22	5.37	0.66			35.56
4.0	0.24	8.88	1.28	5.15	11.18	7.66	7.95	1.17	0.33			12.62
4.5	0.13	19.11	10.32	3.63	8.04	4.44	5.52	1.08	0.32			9.e7
5.0	0.21	54.77	83.30	18.00	8.68	12.47	15.19	3.73	0.67			18.52
Mode	1.000	5.000	5.000	3.500	3.000	3.000	3.000	2.500	-1.000			3.500
Mean	0.727	4.273	4.690	3.213	3.214	3.221	3.405	1.488	-0.220			3.351
SD	0.677	0.744	0.337	1.221	0.815	0.800	0.853	1.635	1.101			0.917
	85	86	87	88	89	90	91	92	93 (1)	93 (2)	95	96
-2.5	a	0.00	0.00	a	a	a	0.00	23.51	0.00	0.00	0.00	0.00
-2.0		0.00	0.00				0.00	11.73	0.00	0.00	0.00	0.00
-1.5		0.00	0.00				0.00	7.11	0.00	0.00	0.00	0.00
-1.0		6.00	0.77				0.00	4.69	0.48	0.00	0.00	0.00
-0.5		4.97	0.43				0.00	4.39	0.02	0.00	0.01	0.00
0.0		7.35	0.81				0.00	3.20	0.03	0.00	0.01	0.00
0.5		11.08	1.31				0.01	3.29	0.28	0.02	0.10	0.00
1.0		15.43	2.02				0.01	3.76	0.79	0.15	0.26	0.01
1.5		26.91	1.98				0.14	7.38	2.05	1.61	0.76	1.82
2.0		14.69	1.45				0.32	10.71	4.11	3.22	1.76	2.83
2.5		5.44	1.55				0.53	6.99	6.50	5.21	2.66	2.92
3.0		1.27	5.87				0.73	3.31	12.71	11.56	3.69	3.04
3.5		0.14	18.34				1.65	1.16	18.12	33.05	6.54	4.56
4.0		0.01	12.28				5.70	0.51	15.06	13.62	9.82	8.66
4.5		0.02	16.57				24.13	1.73	24.10	13.08	36.67	35.43
5.0		6.70	36.62				66.79	6.55	15.76	18.49	37.72	40.76
Mode		1.500	5.000				5.000	-2.500	4.500	3.500	5.000	5.000
Mean		0.952	3.954				4.550	-0.393	3.576	3.582	4.210	4.241
SD		1.384	1.058				0.384	2.479	0.963	0.888	0.704	0.750

[a]Stations with no sample are left blank.

Table 6. Preliminary x-ray log of piston cores.

Station number	Core length (cm)	No. of sed. units	Graded sequence		Non-graded sequence
			Fining upwards	Coarsening upwards	
1	-				
2	27.5	3	Fine shells and grave at base, to silt at top		
3	-				
4	36.0	1			Silty mud
5	-				
6	-				
7	-				
8	-				
9	-				
10	52.0	5	Two coarse shell and gravel units fining up to silt at top		
11	17.0	2	Silt with gravel at base fining up to silt at top		
12	39.5	5	Silt and gravel at base fining up to mud at top		
13	35.0	3	Coarse sand with shells at base fining up to mud and silt at top		
14	24.0	2	Mud and gravel at base fining up to mud at top		
15	17.0	1			Silty mud
16	20.0	1			Silty mud
17	-				
18	-				
19	-				
20	-				
21	40.0	2	Gravel and sand with shell, at base fining up to fine sand and silt at top		
22	-				
23	-				
24	-				
25	-				
26	46.0	2	Gravel with shells at base fining up to sand at top		
27	-				
28	43.0	2	Mud and gravel with shells at base fining up to silt and mud at top		
29	52.0	2	Mud with shells at base fining up to mud at top		
30	36.0	2	Shelly gravel at base fining up to silty mud at top		
31	-				
32	-				
33a	12.0	1			Silty mud
33b	24.0	1			Silty mud
34	14.5	1			Silty mud
35	14.0	1			Sand
36	48.0	1			Silty mud
37	11.0	Core			Sandstone
38a	10.0	tip			Sandstone
38b	5.0	only			Sandstone
39a	25.0	3	Coarse gravel at base fining up to fine gravel at top		
39b	32.0	3	Mud and silt to coarse sand with shells fining up to silty mud at top		
40	25.0	4	Coarse gravel with shells fining up to mud and silt at top		
41	-				
42	25.0	3	Gravel at base to silty mud at top		
43	-				
44	21.0	1			Silty mud
45	-	Core			
46	-	tip			
47	-	only			
48	-				
49	45.0	5	Silt at base, to mud at top		

Table 16 (cont'd.)

Station number	Core length (cm)	No. of sed. units	Graded sequence: Fining upwards	Graded sequence: Coarsening upwards	Non-graded sequence
50	32.2	4	Gravel with shells at base fining up to mud at top		
51	167.0	5	Mud with shells at base fining up to mud at top		
52	223.0	1			Muddy clay
53	224.0	1			Muddy clay
54a	105.0	1			Clay
54b	227.5	1			Clay
55a	138.5	12			Muddy clay
55b	186.0	6			Muddy clay
56a	15.5	1			Clay
56b	43.5	2	Silty sandy mud at base fining up to silt and mud at top		
57	-				Muddy clay
58	109.0	1			Muddy clay
59	160.0	1			Muddy clay
60	217.0	1			Muddy clay
61	206.0	1			Muddy clay
62	202.0	1			Muddy clay with some fragments
63	211.5	1			Muddy clay
64	106.0	1			Silty mud
65	37.0	5	Shell and gravel layers at base fining up to silt at top		
66a	11.0	2	Gravel at base fining upward to silt at top		
66b	16.0	1			Gravel
66c	10.0	1			Sandy gravel
67a	25.0	3		Silt at base, coarsening up to gravel with silt at top	
67b	60.0	3		Silt or clay at base coarsening up to sand and broken shell at top	
68a	80.0	6	Coarse sand with shells at base fining up to silt and mud at top		
68b	20.0	1		Gravel with shell	
69	-				
70	-				
71	-				
72	-				
73	-				
74	104.5	4		Clay	
75	102.5	4	Gravelly silt at base fining up to silt and mud at top		
76	53.0	4	Silt with coarse material at base fining up to silt and mud at top		
77	42.0	4	Coarse sand at base fining up to silt at top		
78	18.5	1		Mud or clay	
79a	42.5	5	Shell fragments and gravel at base fining up to silt and mud at top		
79b	30.0	3	Sandy silt at base fining up to silt at top		
80	39.0	3	Muddy gravel and shell fragments at base fining up to mud at top		
81a	-				
82	-				
83	-				
84	50.0	3	Fine sand at base to mud at top		
85	-				
86	21.0	4	Coarse sand with shells at base to silt at top		

Table 16 (cont'd.)

Station number	Core length (cm)	No. of sed. units	Graded sequence		Non-graded sequence
			Fining upwards	Coarsening upwards	
87	109.0	3	Silty sand with gravel at base fining up to mud at top		
88	-				
89	-				
90	-				
91	186.0	2	Clay with shell fragments at base fining up to silt and mud at top		
92	-				
93a	53.0	4	Mud with shells and gravel at base fining up to mud at top		
93b	85.0	6	Mud with shell fragments at base fining up to mud at top		
94	204.5	1			
95	226.5	1			Clay
96	-	1			Clay

Table 17. Geochemical analysis of van Veen grab samples in ppm (Hg = ppb).

Station number	Cu	Zn	Mn	Cd	As	Hg (ppb)
2	6	82	229	0.86	1.6	20.5
5	8	42	218	0.60	3.2	12.2
10	5	25	311	0.41	4.0	6.8
13	4	24	168	0.14	1.4	8.0
16	4	26	174	0.11	1.4	3.3
17	4	28	177	0.11	1.2	N.D.
21	5	45	352	0.33	3.6	N.D.
33	8	43	184	0.41	1.0	20.5
35	6	39	182	0.71	0.6	3.3
41	8	31	171	0.06	N.D.	6.8
45	7	38	241	0.33	0.6	6.8
47	13	50	376	0.41	3.6	20.5
51	17	55	294	1.01	4.2	15.0
55	16	62	294	0.60	4.8	15.0
59	17	64	378	0.82	2.6	13.8
62	15	55	300	0.60	1.4	12.2
64	11	44	225	0.60	2.4	3.3
66	16	51	403	0.94	2.4	12.2
68	12	46	796	1.09	3.2	5.4
72	9	47	349	0.56	0.6	6.0
74	17	66	341	0.97	2.4	6.8
79	8	30	270	0.56	1.4	3.3
84	10	36	289	1.16	1.2	6.8
87	15	86	474	0.67	1.8	12.2
91	19	66	316	0.75	2.0	11.5
93 (2)	13	41	352	0.33	1.8	12.2
95	17	55	363	0.75	1.8	15.0
Sum	290	1277	8227	16.43	56.2	259.4
N	27	27	27	27	27	27
Ave.	10.7	47.3	304	0.61	2.1	9.6
Max.	19	86	796	1.16	4.8	20.5
Min.	4	24	168	0.06	0.0	0.0
Range	15	62	643	1.13	4.8	20.5

N.D. = not detected and is assumed to equal 0.00.

Table 18. Geochemical analysis of cores (in ppm, Hg in ppb).

Core number	Depth (cm)	Cu	Zn	Mn	Cd	As	Hg (ppb)
2	0-10	13	36	265	0.18	2	2.5
10	0-10	8	26	280	0.09	3	7.5
16	0-10	7	26	125	0.09	2	3.5
21	0-10	9	44	315	0.09	5	1.5
33	0-10	10	35	225	0.09	3	3.5
39	0-10	9	34	250	0.18	4	5.5
51	0-10	12	43	300	0.09	5	7.5
52	0-10	16	60	390	0.09	4	10.0
52	50	15	46	375	0.18	3	3.5
52	100	12	39	335	0.18	4	5.5
52	150	15	50	575	0.37	3	5.5
54	0-10	14	47	350	0.09	3	3.5
54	50	14	44	395	0.18	2	0.5
54	100	14	44	375	0.18	2	0.5
54	150	14	50	465	0.09	2	5.5
55	0-10	13	47	345	0.09	3	3.5
59	0-10	11	34	750	0.18	3	1.5
62	0-10	11	36	285	0.09	3	3.5
64	0-10	20	124	345	0.09	1	3.0
66c	0-10	21	56	456	0.18	6	5.5
68	0-10	22	63	550	0.09	4	5.5
74	0-10	29	61	420	0.09	3	7.5
79	0-10	31	35	300	0.09	2	1.5
84	0-10	9	36	262	0.27	3	7.0
87	0-10	10	115	450	0.37	4	3.5
91	0-10	20	62	467	0.09	5	7.5
93b	0-10	11	56	355	0.09	2	3.5
95	0-10	11	37	355	0.09	4	5.5
Total		401	1386	10349	3.98	90	124.5
Number of samples		28	28	28	28	28	28
Ave.		14.3	49.5	369.6	0.14	3.2	4.4
Max.		31	124	750	0.37	6	10.0
Min.		7	26	125	0.09	1	1.5
Range		24	98	625	0.28	5	8.5

Table 19. Geochemical data (ppm) of cores 52, 54, and 55.

Core	Depth (cm)	Cu	Zn	Cd	Mn	As	Hg (ppb)
52	0-10	16	60	0.09	360	4	10.0
	50	15	46	0.18	375	3	3.5
	100	12	39	0.18	335	4	5.5
	150	15	50	0.37	575	3	5.5
54	0-10	14	47	0.09	350	3	3.5
	50	14	44	0.18	395	2	0.5
	100	14	44	0.18	375	2	0.5
	150	14	50	0.09	465	2	5.5
55	0-10	13	47	0.09	345	3.0	3.5
	50	12	45	0.60	634	0.4	17.1
	100	22	80	1.01	908	1.8	6.8
	150	12	27	0.44	290	0.6	24.0
	Max.	22	80	1.01	908	4.0	24.0
	Min.	12	27	0.09	290	0.4	0.5

Table 20. Comparison showing maxima, minima, and range for Cu, Zn, Mn, Cd, As, and Hg in samples from the Northumberland Strait soils and from crustal rocks.

		van Veen (ppm)	Core (ppm)	Soil (ppm)[a]	Crustal rocks (ppm)[b]
Cu	Average	10.7	14.3	20.0	45
	Range	4.0-19.0	7.0-31.0	2.0-100.0	
Zn	Average	47.3	49.5	50.0	65
	Range	24.0-86.0	26.0-124.0	10.0-500.0	
Mn	Average	304.0	369.6	850.0	1000
	Range	168.0-796.0	125.0-750.0	200.0-6000.0	
Cd	Average	0.61	0.14	-	0.2
	Range	0.06-1.16	0.09-0.37	-	
As	Average	2.1	3.2	5.0	2
	Range	0.0-4.8	1.0-6.0	1.0-75.0	
Hg	Average	0.6 ppb	4.4 ppb	-	0.5
	Range	0.0-20.5	1.5-10.0	0.03-0.30	

[a]Fairbridge (1972); Mitchel (1955)
[b]Mason (1958)

APPENDIX 1: LIST OF REPORTS THAT HAVE RESULTED FROM THE 1975 NORTHUMBERLAND STRAIT PROJECT.

Amaratunga, T. 1976. Macro-benthic fauna investigation. DOE Contract OSA-76-00053, Final Report, Vol. 1, 74 p.

1976. Northumberland Strait Project: benthic fauna distribution and abundance in relation to shellfish resources. ICES C.M.1976/K:27, 54 p.

Amaratunga, T., J. F. Caddy, and A. B. Stasko. 1976. Northumberland Strait Project: an interdisciplinary study of the declining shellfish resources. ICES, C.M.1976/K:26, 17 p.

Edelstein, T. 1976. Northumberland Strait Project algae report. National Research Council, Halifax, Unpublished Report, 21 p.

Linkletter, L. 1976. Incidental marine fish species analysis. DOE Contract OSA-76-00053, Final Report, Vol. II, 34 p.

1976. Scallop shell analysis. DOE Contract OSA-76-0053, Final Report, Vol. III, 90 p.

1976. Polychaetes analysis. DOE Contract OSA-76-00053, Final Report, Vol. IV, 95 p.

McNally, M. A. 1976. A study of benthic Foraminifera as environmental indicators with particular reference to species of the Northumberland Strait and Buctouche Estuary, N.B. B.Sc. Thesis, University of New Brunswick. 101 p.

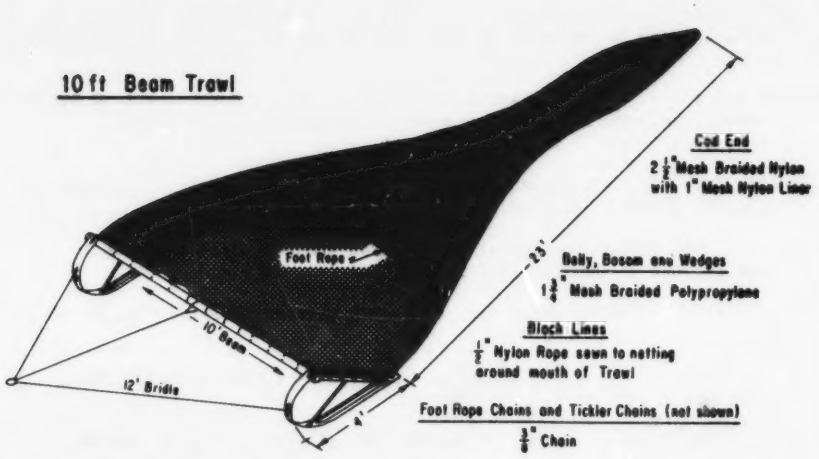
Stasko, A. B. 1976. Northumberland Strait Project: lobster and rock crab abundance in relation to environmental factors. ICES C.M.1976/K:25, 13 p.

Van de Poll, H. W., and B. R. McMullin. 1975. Sedimentary aspects of Northumberland Strait. Dept. of Geology, University of New Brunswick, Fredericton. Unpublished Report, 23 p.

1976a. Size distribution of bottom grab samples from the Northumberland Strait. Dept. of Geology, University of New Brunswick, Fredericton. Unpublished Report, 48 p + appendices.

1976b. Aspects of sedimentation in Northumberland Strait. Dept. of Geology, University of New Brunswick, Fredericton. Unpublished Report, 72 p + appendices.

APPENDIX 2. BEAM TRAWL SPECIFICATIONS DESIGNED AND CONSTRUCTED FOR THE NORTHUMBERLAND STRAIT PROJECT AT THE ST. ANDREWS BIOLOGICAL STATION.



POOR

QUALITY

ORIGINAL